AGRICULTURE AND LIFE SCIENCES DIVISION
Agriculture Group





Employment Trends in Dairy Farming in New Zealand 1991 - 2006

By Jude Wilson
and Rupert Tipples

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"We know more about individual dairy cows than about individual farm staff, yet they are the key to the future success of dairy farming in New Zealand"

….. Tipples, *et al.*, 2004, p.2

1 Introduction

Today agriculture overall is New Zealand's largest export earner. In the year to June 2007 dairy exports alone were 25% of total merchandise export value. These were produced by 3.8 million cows in 11,883 herds (Livestock Improvement, 2006). Dairy export value in 2007 was $NZ 8.41 billion, which is projected to increase to $NZ 11.68 billion in 2011 as a result of higher volumes and prices (Ministry of Agriculture and Forestry, 2007a).

Most milk is consumed in the country of production. Only 5 percent of New Zealand milk is consumed in New Zealand, with the remainder exported as various milk products. Some 97 percent of New Zealand milk is processed by Fonterra, the farmers' dairy cooperative company. Fonterra is also New Zealand's largest company employing some 17,400 staff worldwide and it is the sixth largest international dairy company. However, it only handles some 3 percent of world dairy production, which is sourced from New Zealand (Fonterra, 2007).

The prospects for dairy production are good at present as world prices are at all time high levels. The European Union has been able to export dairy products without the need for export subsidies for the very first time since its creation fifty years ago. However, future prospects, while looking good, are still quite uncertain if the production potential of a number of large countries (e.g. China, USA, Russia and those of Eastern Europe) is focused on milk production (Woodford, 2007). Sustaining New Zealand milk production and productivity therefore has vital importance for the overall state of the economy.

1.1 Social sustainability of dairy farming

The New Zealand dairy farming industry has a vision of being 'World's best in dairying' and its purpose is: "To enhance the sustainable competitive advantage of New Zealand dairy farming". Sustainability is expressed in an imperative to: "Increase the efficient use of resources, reduce reliance on non-renewable resources, and minimise negative impacts on the environment". Social sustainability is not mentioned expressly but it appears by implication in another imperative: "Be an attractive career prospect for current and potential farmers" (Dairy InSight, 2005). However, whether the industry will continue to be socially sustainable is an open question. As an area of traditional family business it is disturbing to find that while overall only 30 percent of family businesses survive to a second generation, some studies report succession rates as low as six percent for dairy farming (Lockhart & Reid, 2005) – perhaps an indication of an increasingly unacceptable lifestyle in the age of 'Generation Y' (Lee, 2007). Poor succession rates are probably not helped by the long term negativity of the dairy farming industry towards employees and any attempt to develop them.

The history of the industry supports this view. Dairy farming has been a significant New Zealand economic activity since the introduction of refrigerated shipping in the 1880s. That permitted the export of butter and cheese, which subsequently became major exports. For many years dairy farming was primarily a family enterprise with little or no employed labour. That is still the dominant form of dairy farming in the North Island. Dairy farmers were opposed to organised labour, especially trade unions, because they interfered with the export

of their primary produce. This came to a head under the Reform party Prime Minister, William Massey, a Mangere dairy farmer. In 1913 farmers became temporary policemen, known as Massey's Cossacks, to ensure their produce could get through for shipping for export (McLean, 1990).

In the 1930s under the first Labour government agricultural employment was regulated through the first Agricultural Workers Act, 1936, but dairy farmers only agreed to accept the proposals when the government promised to keep them out of the Industrial Conciliation and Arbitration Act and guaranteed then better prices for their produce. However, farmers were not prepared to improve these conditions in subsequent years (Tipples, 1987). The dominant culture of the industry has been opposed to employment save on the conditions set by the employing dairy farmers. Even the Farm Workers' Association, a farm workers collective formed specifically to keep farm workers out of industrial unionism in the 1970s, was not fully supported by the farming community and eventually was largely killed off by dairy farmers refusing to grant any kind of membership clause to the Association when they were experiencing financial difficulties because farm workers were failing to join (*ibid*.; Angove, 1994).

Sustained opposition to representative farm worker organizations has left workers without representation in the most recent attempts to address the farm labour crisis, such as the setting up of *Human Capability in Agriculture and Horticulture* following the Human Resources in Agriculture and Horticulture Workshop held in Rotorua in 2002 (Tipples, 2004). The only organization promoting farming amongst the young has been the Federation of Young Farmers' Clubs, which has run a very successful 'Young Farmer of the Year' Competition (Tipples & Wilson, 2007). However, the question remains, how is the industry to be sustained socially with a workforce that can continue to up skill itself to meet the future challenges of competition and the need to keep improving productivity?

1.2 Current dairy strategies for staff

The *Strategic Framework for Dairy Farming's Future* (Dairy InSight, 2005) suggested it was imperative to attract and develop people to help the industry to reach its production and productivity goals. These aims were subsequently elaborated by a pan-industry group of farmers, consultants and training providers, the Dairy People Capability Review Group. They attempted to identify the key targets for the people capability portfolio over the next ten years, 2007-2017 (Dairy InSight, 2007). They perceived the dairy industry as a "…vibrant, knowledge-based industry that provides a wide range of career options and opportunities to its people" (Dairy InSight, 2007, p.2), but one which is facing increased difficulty in attracting such people with the desired competencies and skills. This strategy has a fourfold action focus. First, people are needed to support the continuing need for work on people capability, in effect people to lead the people strategy. Secondly, quality people, perceived as the most important area for future investment, are needed through attracting and retaining what are described as the 'right people'. Retention is to be ensured by making the work environment one that would make the industry a career of choice, or as it is stated "…ensuring the work environment matches the perception we are trying to create…" (*ibid*., p.2). Thirdly, the people attracted are to be assisted to achieve their potential through supporting their transition into the industry, transforming them through training, and supporting them through the adoption of technology and the use of rural professionals. Finally, achieving sustainable productivity gains is based on a close connection with research and further adoption of new systems and technology, as well as a strategy for on-going learning, with such changes being systematically measured (*ibid*.).

However, the dairy industry, in spite of its lofty aspirations, recognizes it is not meeting the expectations of prospective employees. It is not attractive compared to other industries because its hours are long; its staff turnover is high; its accident rate third worst in terms of injuries per person employed, with 25-50 percent of workplace deaths occurring 'on farm'; and staff are commonly required to live on farm, which promotes social isolation (Dairy InSight, 2007, pp.2-3). Recruitment and retention are not helped by a lack of rural support networks either (*ibid.*, and AgITO, 2006). Further those situations are potentially even worse, as the strategy notes, with demand for employees increasing as farms get fewer in number and much larger; productivity in cows per employee is static; and future scenarios across the industry suggest that demand for employed labour will increase by 150 percent. All these points were identified in the earlier work of Tipples *et al.* (2005). On the supply side the key demographic group the industry recruits from, Europeans in the 15-39 age group, is declining in number and as a proportion of the population. The growing part of the population is of Maori, Asian and Pacific ethnicity and urban based. Meanwhile competition for labour from other sectors of employment is also likely to increase (Dairy InSight, 2007; Tipples *et al.*, 2005).

1.3 Lack of labour data

A continuing problem associated with understanding labour numbers and employment issues in dairy farming is a lack of useful and relevant data. While an array of production and statistical information is available for the dairy industry this often does not include 'people' data. Two comprehensive annual reports that focus on dairying are *Dairy Statistics*, published by the Livestock Improvement Corporation (LIC), and the *Annual Dairy Monitoring Report* published by the Ministry of Agriculture and Forestry (MAF). *Dairy Statistics* is principally an animal database and is produced from a variety of source data including that obtained from dairy companies, information stored on the LIC Database and from analysis of the New Zealand Industry Cow Census (an annual survey of dairy farmers) that was conducted up until the 1990/91 season. It does not include any 'people' data. The MAF report does include some discussion of labour issues but focuses strongly on economic reporting and forecasting. Data is collected on dairying and other agricultural enterprises by Statistics NZ through agricultural censuses and business reports. There have been no consistent statistics collected of farm labour in New Zealand since 1996 (Fairweather, 1997, pp.44-47). A considerable number of data 'snapshots' exist as agriculture is sometimes included in survey data that is regularly collected on other sectors of the New Zealand working population. The *Annual Business Frame Update* survey (AFUS), for example, included agriculture in 1998 for the first, and to date, only time. Additional insights may be gained from many exploratory studies, although often the data collected is neither robust nor particularly representative of the situation as a whole.

This report presents a more comprehensive picture of the dairy farming labour force using data from the five yearly *Censuses of Population and Dwellings.* The Census collects data on all those resident in New Zealand on each census night and is comparable, for some variables, across the last four counts, in 1991, 1996, 2001 and 2006. The original analysis of the dairy farmers/dairy farm workers census data was conducted in 2004 as part the *Future Dairy Farm Employment* report prepared for Dairy Insight (project 10015/2003) (Tipples, *et al.,* 2004). This report incorporates the census data analysed in that 2004 report, with data from the 2006 census. The focus is on the dairy farmers/dairy farm workers population but, where possible, comparison has also been made with the broader 2006 population workforce and general population data. In some cases, however, only the 2001 comparison data was available.

2 The dairy farming labour force

2.1 Limitations of analysis

It is possible to create a profile of the dairy farmers/dairy farm workers population, based on census information, although care needs to be taken as not all variables are comparable. Labour market variables such as Hours Worked, Work and Labour Force Status, and Income, for example, are often measured using different time frames (census day, last four weeks, previous week, previous year and so on). Further, some questions are not answered well by respondents when filling in the census forms. Additional compatibility problems can occur when comparing data across different censuses as the format and content of the questions asked may change. Coding and classifications also vary between censuses. Some inconsistencies in data occur as a result of rounding. In the 2006 Census more data was 'missing' than in previous censuses as a result of new confidentially rules.

Despite these limitations a reasonably robust profile can be drawn based on Age, Sex, Highest Qualification attained, Hours Worked and Status in Employment. The information collected on each of these variables can be used to describe the dairy farmers/dairy farm workers population and this segment of the population can be compared with the New Zealand working population in general. Temporal (across the 2006, 2001, 1996 and 1991 censuses) and regional comparisons of these variables are also possible. The additional input of Income and Ethnicity variables would have presented a more complete picture of the dairy farmers/dairy farm workers population but had to be discounted because of some of the difficulties outlined above.

Where relevant, data and information from other sources has been integrated into this report but a degree of caution must be used as the terms of measurement are not always consistent between sources. Even with the Census itself many figures are reported for the general population rather than the working population and so on. It is important to understand how the Census collects and analyses data. Some definitions of the key variables used in this report are explained below; others are introduced when applicable. A full explanation of the Census variables discussed in this report is provided in Appendix 1. All definitions are taken from the 2006 Census Data Dictionary (Statistics New Zealand, 2006).

2.2 Definitions

Statistics New Zealand provides specialised data according to four categories:

1) Census year, e.g. 2006
2) Subject population, e.g. Census Usually Resident Population Count
3) Areas, e.g. Area Unit of Usual Residence
4) Variable name, e.g. Age – Five Year Groups

In this instance we are reporting 1991, 1996, 2001 and 2006 Census year data for the Census Usually Resident Population, by Regional Council, who recorded their Occupation as dairy farmers/dairy farm workers.

- Census usually resident population count:
  - The census usually resident population count of New Zealand is all people counted in New Zealand on census night, excluding overseas visitors and New Zealand residents temporarily overseas.
  - The census usually resident population count of an area in New Zealand is a count of all people who usually live in that area and are present in New Zealand on census

night. This count excludes visitors from overseas, visitors from elsewhere in New Zealand, and residents temporarily overseas on census night.
  - For example, a person who usually lives in Christchurch city but was in Wellington city on census night will be included in the census usually resident population count of Christchurch city and also will be included in the census night population count of Wellington city. They will be excluded from the census night population count of Christchurch city and from the census usually resident population count of Wellington city.

- Census areas:
  - Statistical data are collected and processed by *Statistics NZ* for a range of defined geographic areas. The smallest of these are meshblock and area units; the largest define geographic areas at 75 Territorial Authority and 17 Regional Council levels.
  - There have been some changes in the boundaries of these areas over time; the most recent was an increase in the number of Regional Council areas from 14 to 17 in 1992. This can make long term comparisons of census data difficult although it was possible for the 1991, 1996, 2001 and 2006 Censuses to have most information rebased so that regions were able to be viewed comparatively.
  - The majority of data reported here is at either national or Regional Council level. However, only 11 areas are used as those regions with fewer dairy farmers/dairy farm workers have been combined. In the North Island, Gisborne, Hawke's Bay, Manawatu-Wellington and Wellington are recorded as the 'Rest of the North Island' and in the South Island, Tasman, Nelson and Marlborough are combined as Nelson/Marlborough.

2.3 Industry versus occupation

The Census records labour force statistics in several quite different forms. The primary differentiation is between those recorded as working in the dairy 'industry' and those whose 'occupation' is dairying. For the 'usually resident population' on census night 'occupation' in main job is recorded, as is who employs them. From these sets of figures a calculation is made of the numbers employed in any given industry. Thus, it is possible to be employed in occupations other than dairy farmers/dairy farm workers and yet be counted in the dairy farming industry figures. These calculations generate quite different sets of figures; at the 2006 census there were 33,513 people employed in the New Zealand dairy industry and 24,795 employed by occupation as dairy farmers/dairy farm workers.

Many reports on the dairy farming workforce are misleading as they use 'industry' figures rather than 'occupation', an especially significant point given that on-farm employment shortages have been identified as one of the greatest problems for the industry as whole.

2.4 Occupation Classification 61211

The population described in this report is that classified by Statistics New Zealand according to NZSCO as *Occupation Classification 61211 dairy farmers and dairy farm workers*. This classification includes all those whose main job is dairying 'on-farm': cadets, farm hands, managers, supervisors, workers, farmers, stud farmers, milking equipment operators and sharemilkers. While different versions of the NZSCO were employed for each of the Census years reported, none of the classification changes impacted on the dairy farmers/dairy farm workers population.

A new occupation classification (ANZSCO V1.0) was used in the 2006 Census. Prior to the introduction of ANZSCO, the New Zealand Standard Classification of Occupations 1999 (NZSCO99) was the standard classification in New Zealand. The 2006 Census recorded data under both classifications although in the future ANZSCO only may be used. As Table 1 shows the dairy farmers/dairy farm workers population count was identical according to the two occupation classifications (a more detailed breakdown of these classifications are provided in Appendix 2).We have continued to use the NZSCO classification in this report because the ANZSCO classification split the dairy farmers/dairy farm workers population into two groups. The consequences of this were a greater data loss as a result of confidentially issues, as noted previously.

Table 1: 2006 Census of Population and Dwellings: Occupation Classifications

Classification	**Number**	
ANSCO V1.0		
121313 Dairy Cattle Farmer	21,501	
841512 Dairy Cattle Farm Worker	3,297	
Total		24,795
NZSCO99 V1.0		
61211 Dairy Farmer, Dairy Farm Worker		24,795

Because of the variations in the number of dairy farmers/dairy farm workers between each census and the large regional variation in the number of dairy farmers/dairy farm workers much of the data reported here is presented as percentages, rather than as absolute numbers. Further, as a result of data rounding and confidentiality there is some inconsistency in the total dairy farmers/dairy farm workers population according to different variables.

2.5 Structure of the report

The following report profiles the dairy farmers/dairy farm workers population based on data from the 1991, 1996, 2001 and 2006 Censuses. The report is in two parts. Part 1 profiles the total dairy farmers/dairy farm workers population in respect of overall numbers, Age, Status in Employment, Highest Qualification attained and Hours Worked. Part 2 examines the regional distribution and regional flows of the dairy farmers/dairy farm workers populations over the four census periods. Some variations in the dairy farmers/dairy farm workers population by region are described. A final section presents a detailed comparison of the dairy farmers/dairy farm workers population in Waikato and Canterbury, the principal dairy region in each island in 2006.

3 Part 1: Dairy Farmers/Dairy Farm Workers

3.1 Total population

The total dairy farmers/dairy farm workers population for each census year is shown in Table 2. The reduction in dairy farmers/dairy farm workers numbers from 26,328 in 2001 to 24,792 in 2006 represents a 5.8 percent loss. In the 15 years since 1991 the percentage of the dairy farmers/dairy farm workers population in the South Island has increased from 10 percent to 24.2 percent of the total. This represents an increase of approximately five percent over each five-year period, although in the five years from 2001-2006 this increase appears to have slowed.

Table 2: Total Dairy Farmers/Dairy Farm Workers Population, 1991-2006

	1991		1996		2001		2006	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
North Island	25,326	90.0	25,455	85.0	20,973	79.7	18,780	75.8
South Island	2,808	10.0	4,509	15.0	5,355	20.3	6,012	24.2
TOTAL NZ	28,134	100.0	29,964	100.0	26,328	100.0	24,792	100.0

Between the 1991 and 2001 censuses the number of New Zealanders employed grew by 23.3 percent. Over two thirds of this growth was between 1991 and 1996. This decade was one of relatively low unemployment; the working age portion of this population (defined as 15-64 year olds) grew by only 11.6 percent. Over the 1991 to 1996 period the number of dairy farmers/dairy farm workers also increased, but then fell between 1996 and 2001 to below the 1991 level. There was an overall loss in the dairy farmers/dairy farm workers population of 6.4 percent between 1991 and 2001. Part of the reason for this decline could be increased competition for jobs brought by low unemployment levels. At such times more fashionable jobs will be chosen first. Results from the 1996 and 2001 censuses showed a continuation of a trend away from primary and manufacturing industries to the services sector. The largest intercensal increases in employment between 1996 and 2001 were in property and business services (+20.6 percent), health and community services (+30.1 percent) and education (+20.7 percent). The largest decreases were in manufacturing (-3.8 percent), government administration and defence (-11.2 percent) and agriculture, forestry and fishing (-4.9 percent).

The 2006 census figures continue to reinforce the trend away from primary and manufacturing industries although agriculture, forestry and fishing was the only industry sector to record an intercensal decrease (-3.5 percent). The numbers employed in the manufacturing sector increased by only one percent between 2001 and 2006. The largest intercensal increases were in the construction sector (+42 percent), property and business services (+30.4 percent) and cultural and recreational services (+25.2 percent). At the 2006 Census, property and business services and retail had overtaken manufacturing as the largest employment sector.

This increase of numbers employed in the services sector is coupled with increasing urbanisation of the New Zealand population (Tipples *et al*., 2004). Between the 1996 and 2001 censuses the overall population of New Zealand grew by three percent. The population of Rural Areas also grew over this period by 1.4 percent; the numbers resident in Rural Centres fell by two percent. The population living in Rural Centres, or Rural Areas, in 2001 was 14.3 percent; in 1996 it had been 14.5 percent (Statistics New Zealand, 2001). While

this is not a dramatic reduction the potential implications are great as many of the rural locations are in effect satellite urban areas rather than rural zones. 'Rural' does not necessarily equal 'agriculture'. Figures from the 2001 census showed that just over one in three rural adults (from all rural areas) were agricultural or fishery workers; in 'rural centres' the proportion was only one in six (Statistics New Zealand, 2001).

The classification of the rural population into 'rural centres' (based only on population size), or 'rural areas' (all areas not in urban areas or rural centres), makes it difficult to differentiate the complex gradations of rural existence. The diversity of social and economic characteristics of people living in all areas of the urban-rural spectrum was examined in a special report, *New Zealand: An Urban/Rural Profile* (Statistics New Zealand, n.d.), published after the 2001 Census. A special classification developed for this report re-categorised rural areas on the basis of the significance of urban areas as a source of employment (see Appendix 3 for a full description of this classification). According to this classification dairy farmers/dairy farm workers are primarily found in three rural areas:

- Rural area with a moderate urban influence
- Rural area with a low urban influence
- Highly rural/remote area (Statistics New Zealand, n.d.)

In 2001, a total of 17,274 people in rural areas with a moderate urban influence cited their occupation as agricultural or fisheries worker; 3,867 of these workers (22.4 percent) were dairy farmers/dairy farm workers. Rural areas with low urban influence employed the largest agricultural and fishery workforce with 41, 274 people (30.0 percent of this major occupation group nationally). A total of 12,876 of these workers (31.2 percent of people employed in the agricultural and fishery occupation group) were dairy farmers/dairy farm workers. Over half of the employed population (53.6 percent) in highly rural/remote areas worked in agriculture and fishery occupations, compared with 8.4 percent nationally. There were a total of 19,023 people employed in agriculture and fisheries in highly rural/remote areas at the time of the 2001 Census; 5,349 (28 percent) of these were dairy farmers/dairy farm workers. Dairy farming was much more significant in highly rural/remote areas in the North Island, with 3,474 people, or 37.8 percent of all agriculture and fishery workers, compared with 1,975 people, or 19.1 percent in the South Island (Statistics New Zealand, n.d.). Altogether, 22,092 of the total 2001 dairy farmers/dairy farm workers population of 26,328 were found in these three rural areas.

In rural areas with a high urban influence the proportion of agriculture and fishery workers was well above the national average, but considerably lower than for other rural areas. There were 6,894 people working as agriculture and fishery workers in rural areas with high urban influence at the time of the 2001 Census (compared with 8,454 people in 1996). Of all total agricultural and fishery workers, livestock producers were the most numerous (28.1 percent), followed by crop and livestock producers (20.2 percent) and gardeners and nursery growers (19.9 percent). No figure was given for the number of dairy farmers/dairy farm workers (Statistics New Zealand, n.d.).

The 2006 Census data on rural areas was not available at the time of writing this report.

3.2 Age

There were 1,536 fewer dairy farmers/dairy farm workers in 2006, than in 2001. The change in absolute numbers by age group is shown in Table 3. There has been an increase in the number of young persons taking up employment as dairy farmers/dairy farm workers – both

the 15-19 and 20-24 year age groups increased while the 25-29 year age group only declined by three persons. The largest fall in numbers (-753) was in the 35-39 year age group.

Table 3: Age distribution, 2001 and 2006

Age	2001	2006	Change 2001-2006
15-19 years	1,770	1,971	+201
20-24 years	1,563	1,929	+366
25-29 years	2,337	2,334	-3
30-34 years	3,255	2,967	-288
35-39 years	4,041	2,388	-753
40-44 years	3,795	3,429	-366
45-49 years	3,045	3,036	-9
50-54 years	2,532	2,184	-348
55 years and over	3,993	3,657	-336
TOTAL	26,331	24,795	-1,536

The age distribution of the dairy farmers/dairy farm workers population in 2006 was similar to that of the New Zealand working population as a whole (see Figure 1). Dairy farmers/dairy farm workers were, however, under-represented in the 20-24, 50-54 and 55 years and over age groups and over- represented in all other age groups. This has changed slightly since the 2001 census when a similar comparison showed the dairy farmers/dairy farm workers population to be under-represented in the 20-24, 25-29 and 50-54 year age groups and over-represented in the 55 years and over age group.

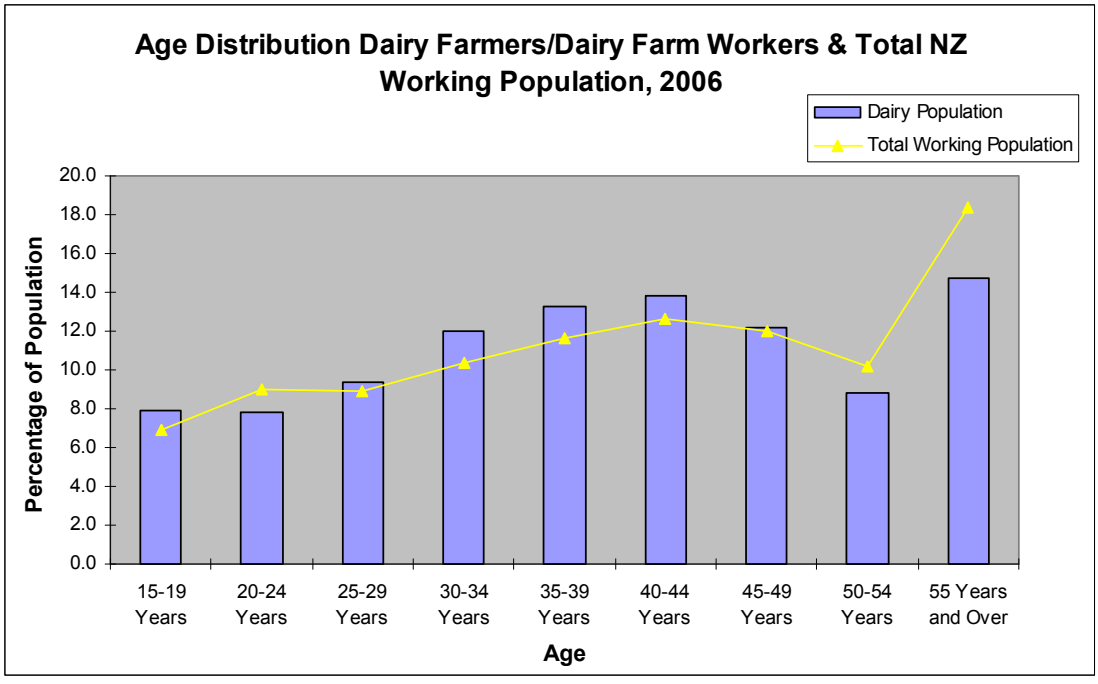

Figure 1: Age Distribution Dairy Farmers/Dairy Farm Workers and Total NZ Working Population, 2006

Figure 1 shows a continuation of the trend identified in 2001 whereby the dairy industry appeared to attract young entry level workers but this was not maintained in the same proportions as in the working population as a whole, especially the age group immediately following the 15-19 year age group. There is potential for this shortfall to increase as a problem for industries such as dairying because the New Zealand population is predicted to alter significantly in age structure over the coming decades. According to the *National Labour Force Projections* New Zealand's labour force is expected to peak at 2.39 million in the mid-2020s, before declining slightly to 2.38 million in 2051. Half the New Zealand labour force will be older than 42 years in 2012, compared with a medium age of 39 years in 2001 and 36 years in 1991. The numbers available in the youth segment of the labour force are declining and will continue to do so. The 18-24 year segment of the labour force is expected to make up only 12 percent of the labour force in 2051, compared with 16 percent in 1996. Those aged 45-64 are expected to increase their share of the labour force from 28 percent in 1996 to 40 percent in 2051. In 1991 there were two people aged 25-44 years in the labour force for every one person aged 45-64 years. By 2013 these age groups will be equal in number (Statistics New Zealand, 2005).

Some evidence of population ageing can be seen in the changing age structure of the dairy farmers/dairy farm workers population over the last four censuses (see Figure 2). The percentage of dairy farmers/dairy farm workers over the age of 50 has increased from 20.8 percent in 1991 to 23.5 percent in 2006. However, there has also been an increase in the percentage of dairy farmers/dairy farm workers aged 15-24 years, from 10.8 percent in 1991, to 15.7 percent in 2006. A significant portion of this increase was over the last census period.

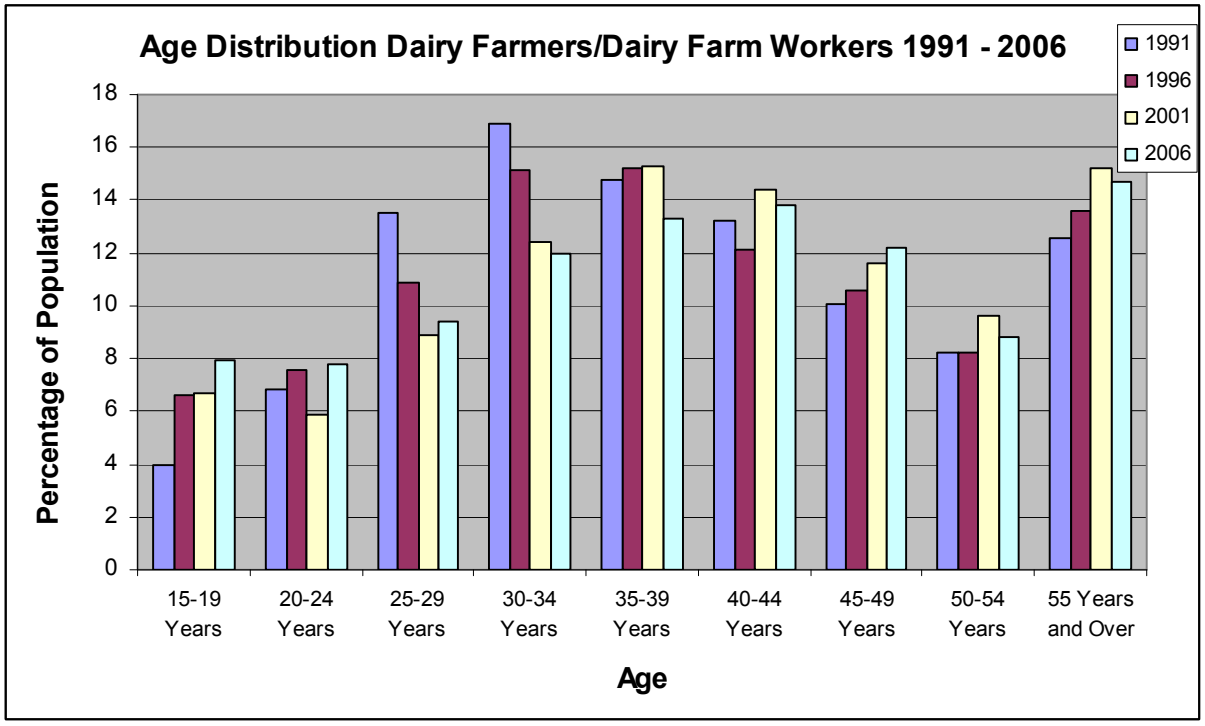

Figure 2: Age Distribution Dairy Farmers/Dairy Farm Workers, 1991- 2006

Although the three youngest age groups have increased their share of the dairy farmers/dairy farm workers population since 2001, there was a fall in the percentage of those aged between 30 and 44 years. This percentage fall represented an absolute loss of 1,407 persons. It is difficult, however, to determine whether changes in age composition are a direct result of factors influencing dairying, or are more simply trends within the wider population. Dairying

trends reported elsewhere have highlighted problems of retention in the industry. These associate staff loss in the mid-age ranges with the realisation by employees that farm ownership is no longer a potential goal. This could account for the fall in the numbers of those employed in the 30-44 age groups. Another factor often postulated as an explanation for staff loss is rural isolation, which can become a problem when employee's children reach secondary school age. The *Pastoral Monitoring Report 2007* noted that the downsizing and combining of rural schools means there is a continuing trend for many children to receive their secondary schooling outside their immediate district. For a number of families, this adds financial pressure that can result in cost-cutting in the farming operation (Ministry of Agriculture and Forestry, 2007b).

Some differences in the age structure found in rural areas, compared to the national population, were reported in *New Zealand: An Urban/Rural Profile* (Statistics New Zealand, n.d.). In highly rural/remote areas the proportions of children, and people between the ages of 30 and 54 years, were higher than the New Zealand average, but there were lower percentages of older people, and younger adults (aged between 15 and 29 years). This population structure may be explained by the lure of education and employment which tend to attract younger people to urban areas. In rural areas with moderate urban influence a higher than average proportion of the population was under the age of 15 years, but there were fewer 15-29 year olds and people aged over 65. Rural areas with low urban influence also had higher numbers of children, and lower numbers of people aged 65 years and over, than the national average.

3.3 Sex

In 2006 females made up 33.7 percent of the dairy farmers/dairy farm workers population; a decrease in percentage from 2001 (34.4 percent) although higher than in both 1996 and 1991 (see Figure 3). Figure 3 shows a similar percentage decrease of females in the agricultural working population between 2001 and 2006 while the percentage of females in the total New Zealand working population increased over this time. Figure 3 also shows that the dairy farmers/dairy farm workers population has a slightly higher percentage of females (33.7 percent) than did the total agricultural population (30.8 percent), and a smaller percentage than the total working population (47.1 percent) of New Zealand.

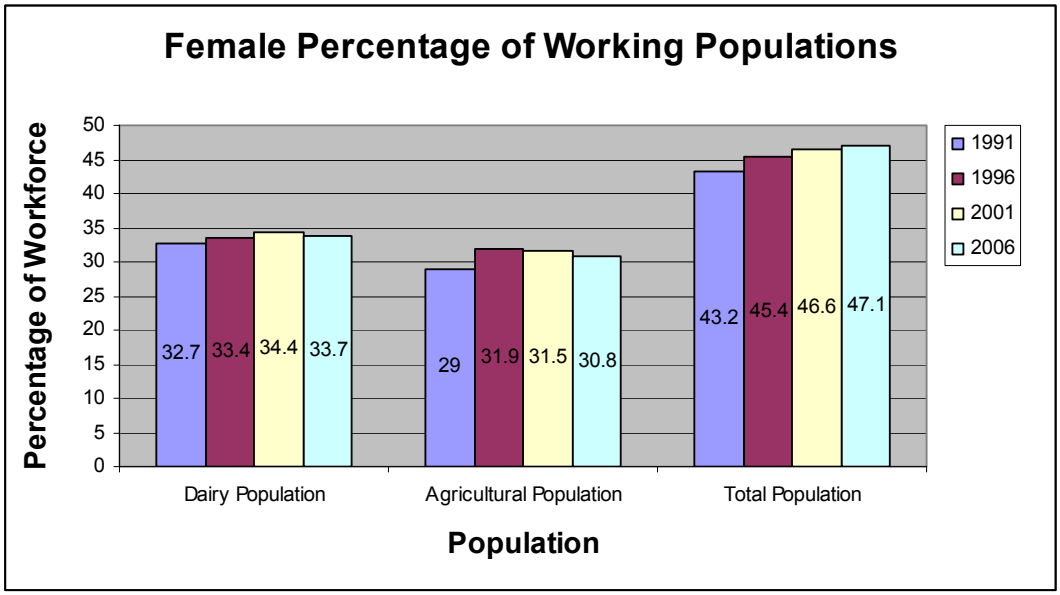

Figure 3: Female Percentage of Working Populations, 1991-2006

3.4 Highest qualification obtained

Highest qualification is derived for people aged 15 years and over, and combines highest secondary school qualification and post-school qualification to derive a single highest qualification by category of attainment.

The highest qualifications held by the dairy farmers/dairy farm workers population in 2006 is shown in Table 4. The 2001 percentage in each category is shown in the far right column and shows the percentage with vocational and degree qualifications to have increased, whilst the percentage with either no qualification or with a school qualification has decreased.

Table 4: Highest Qualification, 2006 (2001)

Highest Qualification	2006		2001
	Number	Percent	Percent
No Qualification	7,065	28	29
School Qualification	9,321	38	40
Vocational Qualification	6,171	25	21
Degree	1,374	6	4
Unidentified/Not Stated	870	3	6
TOTAL	24,801	100	100

Those aged 55 years and over accounted for 33 percent of the dairy farmers/dairy farm workers population with no qualifications. Of the 16,386 dairy farmers/dairy farm workers with no post-school qualifications the spread was more even although 26 percent of this group were also over the age of 50.

Table 5 shows the highest qualifications by age group in percentages:

- As would be expected, none of the 15-19 year group had degree qualifications, and only 12 percent held vocational qualifications.
- Those aged 25-39 were more likely to hold degree qualifications.
- The percentage with vocational qualifications was similar across all age groups except for the youngest and oldest.
- The youngest and the oldest age groups were also the ones most likely to have no qualifications.

Table 5: Age by Highest Qualification, 2006 (percentages)*

Age	No Qualification	School Qualification	Vocational Qualification	Degree
15-19 years	34	50	12	-
20-24 years	25	39	27	4
25-29 years	22	36	29	10
30-34 years	19	42	28	8
35-39 years	25	37	29	8
40-44 years	25	38	29	3
45-49 years	27	38	28	2
50- 54 years	31	38	23	3
55 and over years	46	28	17	3

** Table does not include those for whom Highest Qualification was not recorded.*

Overall, it is difficult to assess the significance of changes in the highest qualifications obtained as there have been significant changes in the number of New Zealanders with post-school qualifications. The proportion of 15 to 24 year olds with tertiary qualifications has increased markedly over the last five decades. In 1966 only 4.5 percent of men and 8.6 percent of women had tertiary qualifications, compared to 19.5 percent of men and 22.9 percent of women in 1996 (Statistics New Zealand, 2000). Tertiary includes both vocational and degree qualifications.

The *Future Dairy Farm Employment* report included analysis of the field of study in which highest qualifications were obtained for the dairy farmers/dairy farm workers population from the 2001 Census. The three most common fields recorded were Agriculture, Management and Commerce and Engineering and Related Technologies. There were some differences in the ages of those studying in these fields. Those with engineering qualifications tended to be older, those with commerce qualifications were concentrated in the mid-age ranges and those with agriculture as a field of study were younger. Of the 2,328 dairy farmers/dairy farm workers in 2001 who had studied agriculture further differentiation showed the most common subgroups of study were Agricultural Science (1,233 or 53 percent) and Animal Husbandry (729 or 31 percent). Again, when examined by age it appeared that Agricultural Science was more popular with younger age groups. It is difficult to determine whether these differences reflect shifts in subject availability or in subject 'fashion'.

The *Future Dairy Farm Employment* report presented a comparison of the highest qualification attained by the New Zealand working population and the dairy farmers/dairy farm workers population. This showed that overall in the 2001 New Zealand working population:

- 1 in 4 had no qualifications (dairy farmers/dairy farm workers 1 in 3.5)
- 1 in 3 had post school qualifications (dairy farmers/dairy farm workers 1 in 4)
- 1 in 5 had vocational qualifications (dairy farmers/dairy farm workers 1 in 4.7)
- 1 in 8 had a degree (dairy farmers/dairy farm workers 1 in 25) (Tipples *et al.,* 2004).

Table 6 shows the Highest Qualifications of the 2006 dairy farmers/dairy farm workers population and that of the total New Zealand population aged 15 years and over.

Table 6: Highest Qualification, 2006 (percentages)

Highest Qualification	Dairy Farmers/ Dairy Farm Workers	Total Population Count Aged 15 Years and Over
No Qualification	28	22
School Qualification	38	31
Vocational Qualification	25	22
Degree	6	14
Unidentified/Not Stated	3	10
TOTAL	100	100

These figures show that the dairy farmers/dairy farm workers population remains poorly educated in comparison to the total population, especially the percentage with no qualifications. As might be expected, however, the dairy farmers/dairy farm workers population is slightly better represented with vocational qualifications. There are a greater percentage of dairy farmers/dairy farm workers with degree qualifications than in 2001 (Table 4). Overall in the 2006 New Zealand working population:

- 1 in 4.5 had no qualifications (dairy farmers/dairy farm workers 1 in 3.6)
- 1 in 3.2 had school qualifications (dairy farmers/dairy farm workers 1 in 2.6)
- 1 in 4.5 had vocational qualifications (dairy farmers/dairy farm workers 1 in 4)
- 1 in 7.2 had a degree (dairy farmers/dairy farm workers 1 in 17)

3.5 Status in employment

Status in Employment classifies people according to whether they are working for themselves or for other people. By this classification the working population is separated into 'paid employees', 'employers', 'self-employed without employees' and 'unpaid family workers'. Table 7 shows the percentage of the dairy farmers/dairy farm workforce in each of these categories at each census year.

Table 7: Status in Employment by Census Year, 1991-2006 (percentages)

Status in Employment	1991	1996	2001	2006
Paid Employee	18	21	24	37
Employer	25	26	32	29
Self-employed and without Employees	52	41	38	27
Unpaid Family Worker	4	10	5	6
Not Stated	1	2	1	1
TOTAL	100	100	100	100

There are some anomalies in this table that can be explained by the unusual occupational structure of the dairy farmers/dairy farm workers workforce. Associated with this is the way the census collects data. Data for Status in Employment is recorded in the census for 'main' job only. Table 7 shows a seemingly illogical situation in 1991, 1996 and 2001 where a higher percentage of the dairy farmers/dairy farm workers workforce were employers (with employees) than were employees. The most likely explanation for this is that whereas an employer is occupied in their main job (and therefore recorded as part of the dairy farmers/dairy farm workers population) their employees might not be because they have another job they consider to be their main job.

Dairy Statistics 2001-2002[1] reported that the main operating structures found on New Zealand dairy farms are owner operator, sharemilker and to a lesser extent contract milker (Livestock Improvement, 2003). This accounts for the high percentage of the dairy farmers/dairy farm workers population in the 'self-employed and without employees' category, as many farms only employ additional labour on a casual or seasonal basis. Traditionally the dairy industry has had a high proportion of unpaid family workers. The relatively large percentage increase in this category in 1996 is attributable to the addition of the word 'farm' into the Status in Employment question in the Census that year.

Table 7 suggests that this operating structure may be changing. The proportion of 'employees' and 'employers' have increased over time, while the numbers of 'self-employed without employees' have fallen. The 2006 figures show some acceleration in these trends. The percentage of paid employees increased markedly and now accounts for 37 percent of the of the dairy farmers/dairy farm workers population. This increase is not matched by a corresponding increase in the percentage of employers (as in the previous census years). Those recorded as self-employed and without employees have continued to decline and now account for only 27 percent of the dairy farmers/dairy farm workers population.

The dairy farmers/dairy farm workers population is very different in structure to that found in the total New Zealand working population. At the 2006 Census, 76 percent were employees, 7.2 percent employers, 11.9 percent self-employed without employees and two percent were unpaid family workers.

As reported in Section 3.3, 33.7 percent of the dairy farmers/dairy farm workers population in 2006 were female. The distribution of Status in Employment by Sex is shown in Table 8. Unpaid family worker was the only category in which females outnumbered males. A higher percentage of females were self-employed without employees (36.5 percent), than were employers (33.4 percent) or employees (26.8 percent). In the total employed census population females outnumbered males in both the employee (50.2 percent female) and unpaid family worker categories (58.4 percent female).

[1] See Appendix 4 for a full description of *Dairy Statistics: Operating Structures* (Livestock Improvement, 2003, 2007)

Table 8: Status in Employment by Sex, 2006

Status in Employment	Male		Female		TOTAL
	Number	Percent	Number	Percent	
Employee	6,627	71.4	2,649	26.8	9,276
Employer	4,869	66.6	2,445	33.4	7,314
Self-employed and without Employees	4,242	63.4	2,445	36.5	6,690
Unpaid Family Worker	618	45.6	738	54.4	1,356
Not Stated	93	58.5	66	41.5	159
TOTAL	16,449	66.3	8,343	33.7	24,795

Of the 16,449 males employed as dairy farmers/dairy farm workers, 40.3 percent were employees, 23.9 percent were employers, 25.8 percent were self-employed without employees and 3.8 percent were unpaid family workers. Of the 8,343 females employed as dairy farmers/dairy farm workers, 31.8 percent were employees, 29.3 percent were employers, 29.3 percent were self-employed without employees and 8.8 percent were unpaid family workers.

In 2001 there was some variation in the Highest Qualification held by Status in Employment. Those with no qualifications were less likely to be employers, while those with school qualifications were evenly spread over all employment status categories. Employers and those who were self employed without employees were more likely to have vocational qualifications. Those with degrees were more likely to be employers (Tipples *et al.,* 2004).

Status in Employment by Highest Qualification held for the 2006 dairy farmers/dairy farm workers population is shown in Table 9 and is shown in percentage form in Table 10.

Table 9: Status in Employment by Highest Qualification, 2006

Status in Employment	No Qual.	School Qual.	Vocational Qual.	Degree	Not Stated	TOTAL
Paid Employee	2,919	3,423	2,121	417	393	9,273
Employer	1,731	2,793	2,070	546	168	7,308
Self-employed and without Employees	1,932	2,532	1,695	321	216	6,696
Unpaid Family Worker	432	525	264	78	54	1,353
Not Stated	45	48	21		39	153
TOTAL	7,059	9,321	6,171	1,362	870	24,783

Table 10: Status in Employment by Highest Qualification, 2006 (percentages)*

Status in Employment	No Qualification	School Qualification	Vocational Qualification	Degree Qualification
Paid Employee	31	37	23	4
Employer	24	38	28	7
Self-employed and without Employees	29	38	25	5
Unpaid Family Worker	32	39	20	6

* *Table does not include those for whom Status in Employment or Highest Qualification was not recorded.*

School qualification was the most common highest qualification in all status in employment groups; degree qualification was the least common. In the paid employee group (who made up 37 percent of the dairy farmers/dairy farm workers population in 2006) 31 percent had no qualification, 37 percent had a school qualification, 23 percent had a vocational qualification and only four percent had a degree qualification. Those who were self-employed without employees had similar percentages to the paid employees group in each of the highest qualification categories. Unpaid family workers had a slightly higher percentage with degrees and a slightly lower percentage with vocational qualifications. A higher percentage of employers had vocational and degree qualifications than those in all other groups.

Table 11 shows the Highest Qualification held by Status in Employment in percentage form:

- Those who had either no qualifications or school qualifications were more likely to be paid employees.
- A slightly higher percentage of those with no qualifications were self-employed without employees (27 percent) compared with employers (25 percent).
- A slightly higher percentage of those with school qualifications were employers (30 percent) compared with self-employed without employees (27 percent).
- A higher percentage of those with vocational qualifications were paid employees and employers (34 percent in each group) than were self-employed without employees (27 percent).
- Those with degree qualifications were more likely to be employers (40 percent), followed by paid employees (31 percent) and self-employed without employees (24 percent).

Table 11: Highest Qualification by Status in Employment, 2006 (percentages)*

Highest Qualification	Paid Employee	Employer	Self-employed and without Employees	Unpaid Family Worker
No Qualification	41	25	27	6
School Qualification	37	30	27	6
Vocational Qualification	34	34	27	4
Degree Qualification	31	40	24	6

* *Table does not include those for whom Highest Qualification or Status in Employment was not recorded.*

Regional differences in the Status in Employment structure of the dairy farmers/dairy farm workers population are discussed in Part 2.

3.6 Hours worked

Hours worked in employment is a count of the total number of hours worked, per week, by all people aged 15 years and over. It includes both paid and unpaid work. Although the total number of hours worked is recorded, those working 29 hours or under are usually reclassified as 'part time' for most analyses. Table 12 shows the hours worked per week in percentages for the 2001 and 2006 dairy farmers/dairy farm workers population and for the total employed census usually resident population in 2006.

Table 12: Hours Worked Dairy Farmers/Dairy Farm Workers, 2001 & 2006, and Total Employed Population, 2006 (percentages)

	Dairy Farmers/Dairy Farm Workers		Total Employed NZ Population
Hours Worked	**2001**	**2006**	**2006**
PT	19	20	22
30-39	6	6	13
40-49	11	13	43
50-59	13	15	12
60-69	19	20	10*
70+	32	26	
TOTAL	100	100	100
* *Figure available for 60+ hours only*			

In 2001, 19 percent of the dairy farmers/dairy farm workers population were employed part time. This had fallen from 21 percent in 1996. In both 1996 and 2001 part time workers accounted for 22.5 percent of the total working population. Twenty-three percent of the total agricultural working population worked part time in 2001. Of the dairy farmers/dairy farm workers population the percentage of females (39.4 percent) who worked part time was much higher than the percentage of males (8.6 percent). The female percentage remained higher than male for all categories of hours of work up to, and including, the 40-49 hours worked group.

In 2006 the only 'hours worked' category in which there was a decrease was for those working 70+ hours. The five percent loss in the numbers working these hours was balanced by increases in the percentages in all the other 'hours worked' categories except for the 30-39 hours. Altogether 46 percent of the dairy farmers/dairy farm workers population worked over 60 hours per week in 2006 compared with 51 percent in 2001. Although this indicates that the hours worked by those in dairying has decreased the dairy farmers/dairy farm workers population still work much longer hours than the New Zealand population. As Table 12 shows, 43 percent of the total working population worked 40-49 hours per week in 2006, compared with only 13 percent of the dairy farmers/dairy farm workers population.

Hours Worked by Status in Employment are shown in Table 13 and in Figure 4. Paid employees have the largest numbers in all the hours worked categories, most probably because employees now make up 38 percent of the total dairy farmers/dairy farm workers

population. Those working part time and in the three categories of 50+ hours worked were most likely to be employees, followed by employers and then self-employed without employees. This distribution is linked to the overall numbers in each of the Status in Employment categories. For those who worked 30-39 hours and 70+ hours there was a more even spread across all categories of Status in Employment.

Table 13: Hours Worked by Status in Employment, 2006

Hours Worked	Paid Employee	Employer	Self-employed and without Employees	Unpaid Family Worker	Not Stated	TOTAL
PT	1,839	1,218	960	489	18	4,524
30-39	435	408	420	75	6	1,344
40-49	1,164	771	825	105	9	2,874
50-59	1,458	1,029	894	63	-	3,444
60-69	1,785	1,404	1,290	90	18	4,587
70+	2,067	1,950	1,866	144	42	6,069
Not Stated	522	522	432	396	48	1,920
TOTAL	9,270	7,302	6,687	1,362	141	24,762

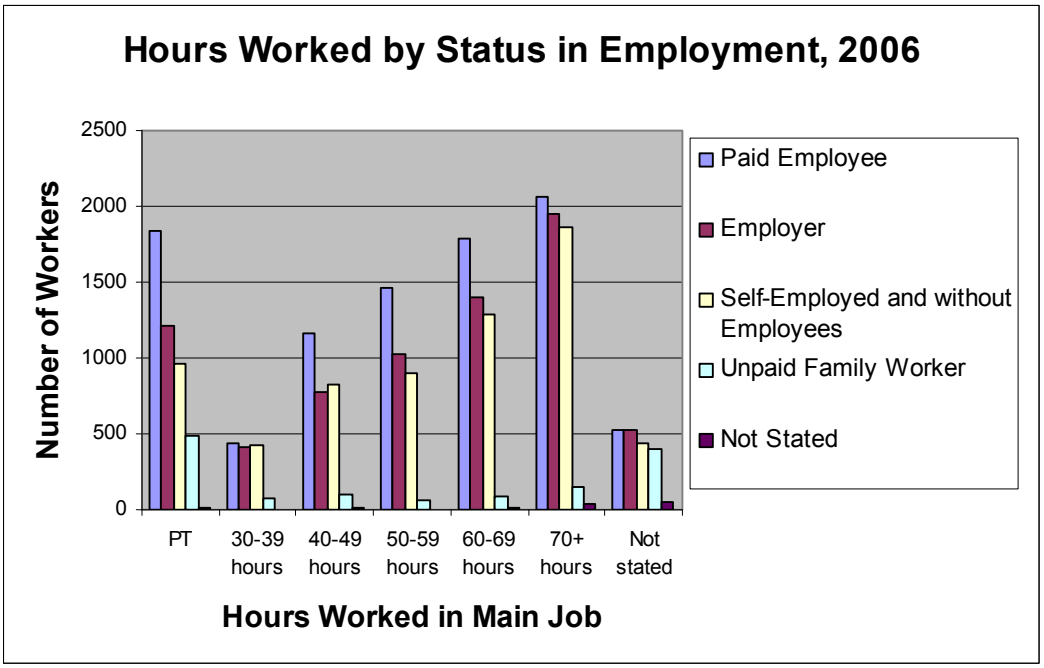

Figure 4: Hours Worked by Status in Employment, 2006

Table 14 shows the percentages in each Status in Employment category by the number of Hours Worked. The figures show that:

- 1 in 5 paid employees were either part time, or worked more than 70 hours per week
- A surprising 17 percent (almost 1 in 6) of employers worked part time while 26 percent worked more than 70 hours (almost 1 in 4)
- Those who were self-employed and without employees had the smallest proportion of part time workers (14 percent) and the highest proportions working more than 60 hours per week (49 percent)
- More than 1 in 3 unpaid family workers worked part time
- Unpaid family workers were more likely not to record their hours worked (28 percent)

Table 14: Status in Employment by Hours Worked, 2006 (percentages)

Status in Employment	PT	30-39 Hours	40-49 Hours	50-59 Hours	60-69 Hours	70+ Hours	Not Stated
Paid Employee	20	5	13	16	19	21	6
Employer	17	6	11	14	19	26	7
Self-employed and without Employees	14	6	12	13	20	29	6
Unpaid Family Worker	35	6	8	5	7	11	28

Taken together, the data presented in Table 12 to Table 14 and Figure 4 show that dairy farmers/dairy farm workers population work longer hours than the New Zealand working population. Altogether 40 percent of employees, 45 percent of employers and 49 percent of those self-employed without employees worked over 60 hours per week. As Table 12 showed, only 10 percent of the total New Zealand working population worked more than 60 hours per week.

3.7 The dairy farmers/dairy farm workers population, 1991-2006

According to *New Zealand: An Urban/Rural Profile* the number of agriculture and fishery workers in rural areas with a moderate urban influence fell by 15.5 percent (compared with a 10.5 percent decline nationally). This decline was attributed to a decrease in popularity of more traditional farming categories such as cattle and sheep farming. A similar decline was reported in both rural areas with a low urban influence and in highly rural/remote areas although the decline in the numbers of dairy farmers/dairy farm workers was not as significant as for other many other categories of agriculture and fishery employment (Statistics New Zealand, n.d.).

Dairy farming occurs in all four categories of rural areas (see Appendix 3). The proximity to urban areas affects population growth in each of these rural areas. Population projections suggest that rural areas with moderate urban influence are likely to increase by 21 percent between 2001 and 2021 (compared with a national average of 16 percent). However, rural areas with low urban influence are projected to increase by only two percent and highly rural/remote areas are projected to decline in population between 2001 and 2021 (Statistics New Zealand, n.d.). Possible factors that foster this shift are an increasing desire for the space of rural living combined with closeness to urban amenities and more flexible modes of private transport. The characteristics of rural area populations also impacts on birth and

death rates. Rural areas tend to have fewer females between the ages of 20 and 34 years and therefore lower birth rates. Also, there is movement by older people into closer proximity of care facilities in more urbanised environments, thus reducing the death rate of rural areas. In highly rural/remote areas there are also lower proportions of younger adults (aged between 15 and 29 years) – attributed by the lure of education and employment opportunities in urban areas (Statistics New Zealand, n.d.).

This section has profiled the total dairy farmers/dairy farm workers population of New Zealand according to available 1991, 1996, 2001 and 2006 Census data. It extends the analysis of the *Future Dairy Farming Employment* report (Tipples *et al.*, 2004) by providing a fourth data point to highlight industry trends. The numbers working on dairy farms have declined over these four censuses, part of a general trend away from manufacturing and production industries to service industries. However, that decline has taken place against a background of overall industry growth and major regional shifts in production. Further, it has occurred against a background, at least since 2000 of a farm labour crisis (Tipples & Morriss, 2002). The *angst* experienced in the dairy sector particularly has given rise to some of the initiatives described above, the like of which have not been seen since the era of the *Agricultural Development Conference* in the 1960s (Tipples, 2004). Migrant labour has become a reality in the dairy sector, particularly in Canterbury, to permit industry growth to continue, but in the background there are always concerns about industry productivity against overseas competition.

The dairy farmers/dairy farm workers population differs from the New Zealand working population, in the following respects:

- It is older
- It has fewer females actively engaged
- It is less well-educated
- It has a unique status in employment structure based on share milking unlike anywhere else in the world (see Appendix 4)
- The population, of whatever employment status, works significantly longer hours than other occupations

However, there is some evidence of change in the structure of farming labour in Dairy Statistics. The Operating Structures (e.g. Owner, sharemilker, contract milker, equity partner etc.) – shows a reduction in the percentage that are sharemilkers (Appendix 4). This has an impact on the traditional path into dairy farming, the traditional dairy farming career ladder, and may reduce the appeal of dairy farming as an occupation or job with a prospect of capital gain.

Part of dairy farm growth has been based on conversions of unused land, or other farms (e.g. sheep and beef), or even former forestry territory to dairy farming. This also has implications in regard to support industries and labour e.g. dairy shed building, veterinary services and other support sectors e.g. see Table 23 Canterbury, and also reports in the press on dairy shed builders struggling to meet demands in both Southland and Canterbury (Law, 2007; Milne, 2007).

There have been changes in all aspects of the dairy farmers/dairy farm workers population over the four census periods. There have also been some changes in on-farm working practices such as Once-a-Day (OAD) milking (Verwoerd & Tipples, 2007) and a change from sharemilking to equity partnerships. Table 15 presents a summary of dairy farming labour issues identified in the *Pastoral Monitoring Report 2007*.

Table 15: Dairy Farming Labour Issues

Pastoral Monitoring Report 2007
▪ The availability of farm labour continues to be a problem and is expected to be exacerbated by the growing number of conversions. Some farmers are trying to alleviate this by changing to once-a-day milking and using mechanisation and labour-saving technology, especially on the larger rotary cowsheds as a means of improving employment conditions, and to aid with large herd management. ▪ There have been relatively few 50/50 sharemilking positions available, a continuing trend from previous years. This trend has resulted from farm amalgamations and farm owners opting to purchase livestock and employ lower order sharemilkers, managers or contract milkers. Some farmers have sought to alter their sharemilking agreements to capture a greater share of the increased milk price. Because lower order sharemilkers on farms with less than 300 cows must be paid a minimum of 21 percent of the milk cheque, most smaller farmers opt to use contract milkers instead. ▪ There is a steady interest in equity partnerships as an avenue for people to enter land ownership. ▪ Over the past few years the salary levels for farm staff, the quality of accommodation and amount of time off for farm staff have all increased. As in previous years, while the labour market is tight and farmers have sometimes found it difficult to employ the quality of staff they would ideally desire, virtually all farms have sufficient staff to run the property. ▪ There are still a number of farmers exiting the dairy sector for a variety of reasons, including lifestyle, health issues and other personal factors. However, with the significant increase in payout announced for the 2007/08 season, a number of farms that had previously indicated their intention to exit the dairy sector, have now opted to stay in milk production. ▪ Once-a-day milking has now established itself as an integral part of the farm system for a small number of dairy farmers in the Waikato and Bay of Plenty regions. While many farmers move some or all of their herds to once-a-day milking in the latter half of the season, there is still a relatively small proportion who milk once-a-day for the entire season.
(Ministry of Agriculture & Forestry, 2007b, pp.84-87)

Many of these changes and issues are not applicable to the dairy farmers/dairy farm workers population on a national level and in the next section we examine the regional variations in the dairy farmers/dairy farm workers labour population.

4 Part 2: Regional Distribution

4.1 Regional distribution

A striking feature of the dairy industry in New Zealand is its uneven regional distribution. Often Regional Council divisions are aggregated to reduce the number of areas used in reports. Regions are usually combined based on common farming characteristics, although there do not appear to be any standard aggregations used. The *Dairy Statistics 2001-2002* report, for example, presented data on an aggregation of 12 regions from an original 17 (Livestock Improvement, 2003); since 2003 *Dairy Statistics* data has been presented for 11 North Island and six South Island Regions (Livestock Improvement, 2004, 2005, 2006, 2007). The *Dairy Monitoring Reports* (Ministry of Agriculture and Forestry, 2003, 2006, 2007b) present detailed data for six combined regions.

The variations in these reports make it difficult to match sets of data across sources. Additionally, there is doubt as to whether the original units used are comparable with the census regions. *Dairy Statistics*, for example do not identify any region as 'Waikato', rather they amalgamate local authority boundary areas into South Auckland, Western Uplands and Central Plateau Regions. The Central Plateau area includes the local authority area of Taupo, whereas Statistics New Zealand does not include all of the Taupo local authority area in Waikato Region.

Table 16 shows the regional distribution of dairy farmers/dairy farm workers across all New Zealand regions in 2001 and 2006 by both number and percentage. As reported earlier, of the total 2006 dairy farmers/dairy farm workers population 18,780 (75.8 percent) were located in the North Island and 6,012 (24.2 percent) in the South Island. Waikato remained the most populous region by far with 34.2 percent of the total in 2006 (a slight drop from 35.1 percent in 2001); Waikato and Taranaki combined had almost 50 percent of the total dairy farmers/dairy farm workers population. Of the South Island Regions, Canterbury and Southland recorded the most dairy farmers/dairy farm workers, with 8.8 percent and 6.6 percent of the New Zealand total respectively.

Table 16: Regional Distribution, 2001-2006

	2001		2006		Change	
Regional Council Area*	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Northland	2,259	8.6	1,773	7.2	-486	-1.4
Auckland	966	3.7	708	2.9	-258	-0.8**
Waikato	9,246	35.1	8,469	34.2	-777	-1.0**
Bay of Plenty	1,578	6.0	1,407	5.7	-171	-0.3
Gisborne	24	0.1	15	0.1	-9	0
Hawke's Bay	231	0.9	267	1.1	36	0.2
Taranaki	4,011	15.2	3,636	14.7	-375	-0.6**
Manawatu-Wanganui	2,082	7.9	2,025	8.2	-57	0.3
Wellington	576	2.2	480	1.9	-96	-0.3
West Coast	666	2.5	756	3.0	90	0.5
Canterbury	1,857	7.1	2,187	8.8	330	1.8**
Otago	879	3.3	960	3.9	81	0.5**
Southland	1,374	5.2	1,635	6.6	261	1.4
Tasman	378	1.4	345	1.4	-33	0
Nelson	24	0.1	9	0	-15	0.1
Marlborough	177	0.7	120	0.5	-57	0.2
TOTAL	26,328		24,792		-1536	

* *Mainland New Zealand is covered by 16 of the 17 Regional Council Areas*
** *Some differences are a result of rounding in data*

The 2006 figures show:

- The biggest decrease in absolute numbers was in the Waikato region (a loss of 777 persons), followed by Northland (-486) and Taranaki (-375).
- The largest percentage decrease was in Northland – from 8.6 percent to 7.2 percent of the total dairy farmers/dairy farm workers population. There was a percentage decrease of one percent in Waikato.
- The only North Island region to record any increase was Hawke's Bay (an increase of 36 persons). The percentage of the total dairy farmers/dairy farm workers population in this region remains small – in 2006 they made up only 1.1 percent of the New Zealand total.
- In the South Island, the West Coast, Canterbury, Otago and Southland regions all recorded increases while there were decreases in Tasman, Nelson and Marlborough (however numbers were small in these regions and Tasman retained the same percentage of the total dairy farmers/dairy farm workers population at 1.4 percent).
- The biggest increases were in Canterbury (+330 persons) and Southland (+261).
- Canterbury also had the largest percentage increase – from 7.1 percent to 8.8 percent of the total dairy farmers/dairy farm workers population.
- There was a 1.4 percent increase in Southland.

The regional distribution of those occupied in dairy farming corresponds with the distribution of dairy herds reported in *Dairy Statistics 2005-2006*, although as noted above there appear to be some variations in the regional boundaries used. One third (32.2 percent) of all dairy herds[2] were located in the South Auckland region (which forms part of Waikato Regional Census District). Taranaki, with 16 percent of dairy herds is the next most populous region. South Island dairy herds accounted for 19 percent of the national total but had 28.6 percent of the cows. The overall distribution of herds within regions of each island in 2005/06 remained similar to previous seasons.

The distribution of dairy farmers/dairy farm workers, dairy herds and cows for selected regions, and for each island, is shown in Table 17. This distribution reflects the variations in farm operating structures regionally. South Island regions, such as Canterbury, Otago and Southland, have more workers and fewer herds with much larger average herd sizes. The average herd size in both islands continues to increase. In general, the traditional North Island farming regions have more herds and fewer workers. These regional variations are examined further in Section 4.3.

[2] There is some confusion in reports as to the data reported. *Dairy Statistics 2001-2002* reported regional data on the number of dairy farms. Since 2003-2003 data has been reported for dairy herds. Historically, 1 farm=1 herd and the terms were used interchangeably but, in actual fact, what is reported are the number of operating milk vats (Source: Glenn Hansson, Information Analyst, Dairy Statistics).

Table 17: Regional Distribution of Dairy Workers, Herds and Cows, Selected Regions, 2006 (percentages)

Selected Regions	Percentage of workers	Percentage of herds	Percentage of cows
North Island Total	75.8	80.9	71.4
Waikato	34.2	36.7*	34*
Taranaki	14.7	16.3	12.6
Bay of Plenty	5.7	5.3	4.9
South Island Total	24.2	19.1	28.6
Canterbury	8.8	5.7	11.3
Southland	6.6	5.3	7.9
* *Combined figure for South Auckland, Central Plateau and Western Uplands.*			

4.2 Internal migration

Changes in the regional distribution of dairy farmers/farm workers result in part from migratory processes which are poorly understood. The data which follow elaborate the initial exploratory work of Tipples and Lucock (2004). One feature they highlighted was the industry practice of 'Gypsy day' on 1 June, the very stressful time of year when traditionally farm employers, employees and herds change farms. Between the 1991, 1996, 2001 and 2006 censuses the regional distribution of dairy farmers/dairy farm workers population has changed considerably, as a result of Gypsy day and other factors. The biggest change has been the percentage increase of this population in the South Island, from 10 percent in 1991, to 24.2 percent in 2006. Table 18 shows the numbers and percentages of dairy farmers/dairy farm workers in 1991 and 2006 for each region.

The greatest loss was in the Waikato region with 2,772 fewer dairy farmers/dairy farm workers in 2006 than in 1991. This represented a reduction from 40 percent of the New Zealand dairy farmers/dairy farm workers total in 1991 to only 34.2 percent in 2006. The largest increases were in the South Island where the Canterbury and Southland dairy farmers/dairy farm workers populations increased by 1,254 and 1,263 persons respectively.

It is possible from the census to find out where the dairy farmers/dairy farm workers population at each census date had been living five years previously. This then shows the migration of the dairy farmers/dairy farm workers population around New Zealand from 1986 to 2006. This data was extremely complex to deal with and included a significant number of missing data from responses recorded as 'not stated', or 'region not further defined'. Maintaining a clear picture of the variable limitations is important – what is recorded is the previous regional location of the dairy farmers/dairy farm workers population, and members of this population may not have been part of the same 'occupation' population five years previously. Additionally, the figures do not show those who might have left the dairy occupation except in the total losses, by regions, in absolute numbers.

Table 18: Regional Distribution Dairy Farmers/Dairy Farm Workers, 1991 & 2006

Regional Council Area	1991		2006		Change	
	Number	Percent	Number	Percent	Number	Percent
Northland	2,898	10.3	1,773	7.2	-1,125	-3.1
Auckland	1,563	5.6	708	2.9	-855	-2.7
Waikato	11,241	40.0	8,469	34.2	-2,772	-5.8
Bay of Plenty	1,998	7.1	1,407	5.7	-591	-1.4
Gisborne	24	0.1	15	0.1	-9	0
Hawke's Bay	87	0.3	267	1.1	180	0.8
Taranaki	5,064	18.0	3,636	14.7	-1,428	-3.3
Manawatu-Wanganui	1,905	6.8	2,025	8.2	120	1.4
Wellington	549	2.0	480	1.9	-69	-0.1
West Coast	582	2.1	756	3.0	174	0.9
Canterbury	933	3.3	2,187	8.8	1,254	5.5
Otago	375	1.3	960	3.9	585	2.6
Southland	372	1.3	1,635	6.6	1,263	5.3
Tasman	378	1.3	345	1.4	-33	0.1
Nelson	18	0.1	9	0	-9	-0.1
Marlborough	147	0.5	120	0.5	-27	0
TOTAL	28,134	100.0	24,792	100.0	-3,342	100.0

Table 19 shows the percentage of each regional dairy farmers/dairy farm workers population who had moved in the five years prior to each census year. For ease of analysis we have aggregated the census regions to report data on six North Island and five South Island Regions (see Section 2.2).

Table 19: Percentage of Dairy Farmers/Dairy Farm Workers Moving by Region, 1991-2006

Region	Percentage of Regional Total Moving*			
	1991	1996	2001	2006
Northland	13	18	13	19
Auckland	12	19	17	21
Waikato	13	16	14	19
Bay of Plenty	16	20	19	26
Rest of North Island	11	18	17	23
Taranaki	5	10	9	13
West Coast	18	26	26	34
Canterbury	15	26	29	36
Otago	17	32	34	39
Southland	10	51	33	36
Nelson/Marlborough	12	21	20	30
* *Includes those who did not record a previous location.*				

The North Island regions were more stable, with average movement of 20.2 percent of their dairy farmers/dairy farm workers population between 2001 and 2006. In contrast, the average movement in South Island regions was 35 percent. In the North Island, Taranaki was by far the most stable region with only 13 percent movement between 2001 and 2006. The Bay of Plenty was the most volatile, with 26 percent movement between 2001 and 2006. The North Island percentage movements remained relatively consistent over the first three census periods with a noticeable increase at the last census.

In the South Island migration has been more volatile across all four census periods. Of the dairy farmers/dairy farm workers population in Southland at the 1996 census, for example, only 49 percent had been in the region in 1991. Movement into Southland appeared to peak in this census period and subsequently dropped to more normal South Island levels at the 2001 census. This movement increased again in 2006 with 36 percent of the 2006 Southland dairy farmers/dairy farm workers population residing outside the region in 2001. Both the Otago and Canterbury regions have remained volatile in terms of migration. Only 61 percent of the dairy farmers/dairy farm workers population in Otago at the 2006 Census had been in the region in 2001. Sixty-four percent of the 2006 Canterbury dairy farmers/dairy farm workers had been in the region five years prior to the 2006 census.

Figure 5 presents a summary of the dairy farmers/dairy farm workers population migration in absolute numbers for each of the four census years. The migration summary maps show the numbers who remained in the same region (although they may have moved within that region), those that have moved regions within islands and those that have moved islands. There has been a marked increase in the movement between islands over these years. In particular, the increases in the South Island dairy farmers/dairy farm workers population can be seen. At the time of the 1991 Census there were 114 dairy farmers/dairy farm workers in the South Island who had been resident in the North Island five years previously. Conversely, 99 North Island dairy farmers/dairy farm workers had previously been in the South Island. At the time of the 1996 Census the number moving south had increased to 762 – a 568 percent increase. The movement south had dropped slightly by the 2001 Census, although there was still a much greater number moving south than north. The 2006 census data shows that 612 of the South Island dairy farmers/dairy farm workers population had been in the North Island five years previously, whilst 183 had moved from south to north.

There was a steady increase in the South Island dairy farmers/dairy farm workers population coming from overseas over the first three census years; from 57 in 1991, to 126 in 1996, and 171 in 2001. This increased further in 2006 with 462 of the South Island dairy farmers/dairy farm workers population coming from overseas. While it is impossible to know whether these people are returning New Zealanders or immigrant workers, the fact that over the same period the numbers from overseas remained reasonably stable for the North Island dairy farmers/dairy farm workers population suggests that this may, in a large part, be overseas workers satisfying demand in the South Island. A significant number of people at each census count did not report their location five years previously.

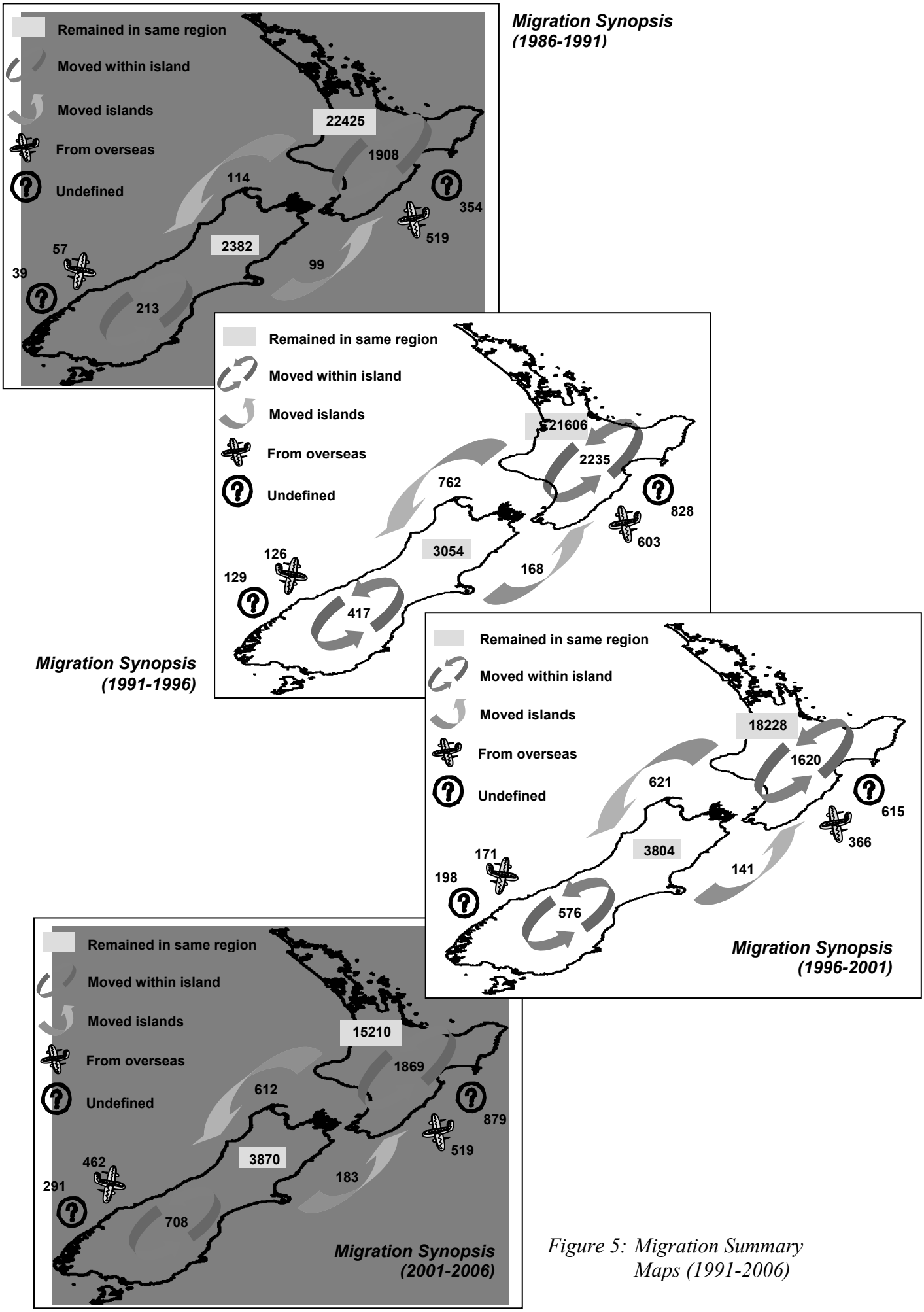

Figure 5: Migration Summary Maps (1991-2006)

The 2001-2006 synopsis map (Figure 5) clearly shows the more volatile movement in the South Island with 708 of the 2006 dairy farmers/dairy farm workers population having been in another South Island region five years previously, 612 moving from the North Island, 462 coming from overseas and a further 291 undefined (not recording their location five years previous). Based on these figures 35 percent of the 2006 South Island dairy farmers/dairy farm workers population had moved from where they had been living in 2001. For both islands there may also have been movement within regions.

For the 2006 North Island dairy farmers/dairy farm workers population, 183 had moved from the South Island, 1869 had moved between regions in the North Island, 879 came from overseas and 879 had been in undefined locations. Based on these figures 20 percent of the 2006 North Island dairy farmers/dairy farm workers population had moved from where they had been living in 2001.

As noted earlier, care must be taken when discussing percentage movements as the total numbers involved in many cases may be quite small. For example, the 19 percent movement of the 2006 Waikato dairy farmers/dairy farm workers population involved 1,593 persons who had not been in that region in 2001. In contrast, the 36 percent movement of the 2006 Canterbury dairy farmers/dairy farm workers population, who had not been in Canterbury in 2001, involved only 783 persons.

The absolute numbers are small for some regions and it is useful to combine these with the relative proportions of regional movement. The following four maps (Figure 6 to Figure 9) present the migration of dairy farmers/dairy farm workers in more detail. The number of dairy farmers/dairy farm workers in each region who were not in that region five years previously is shown in the boxes. The pie charts show the regions those migrants came from. Black pie pieces represent migration from overseas. Grey pieces represent migration from undisclosed locations within New Zealand. The maps clearly show the scale of the migration involved as well as the changes in the scale, particularly in the South Island. The 1986-1991 (Figure 6) map has very small ‘pies’ in all South Island regions. These increase in size over the next three maps in the expanding dairy regions of Canterbury, Southland and Otago. The colours in the pies show where migration has come from and clearly demonstrate the shift south, and subsequent internal migration around the South Island of the dairy farmers/dairy farm workers population.

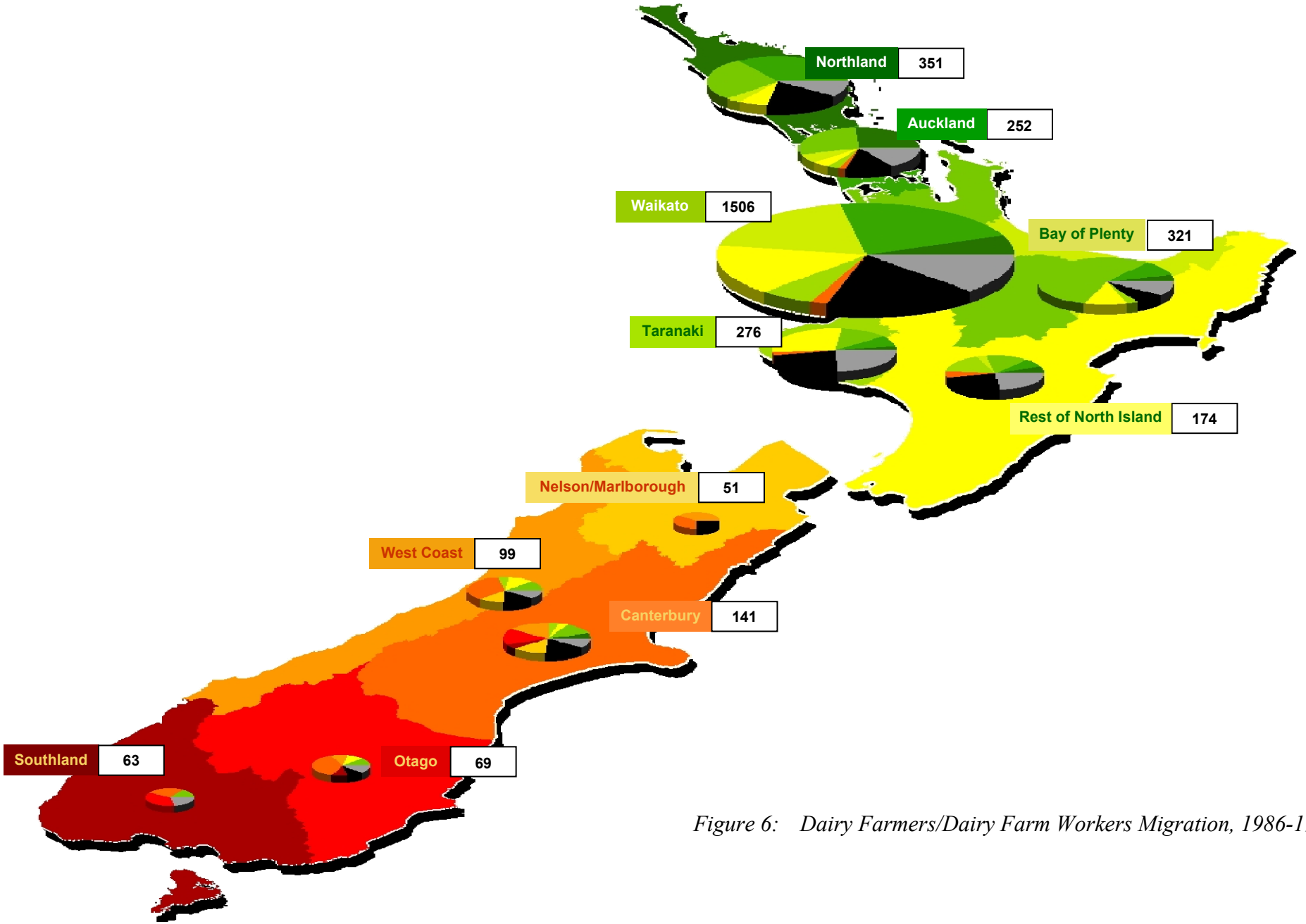

Figure 6: Dairy Farmers/Dairy Farm Workers Migration, 1986-1991

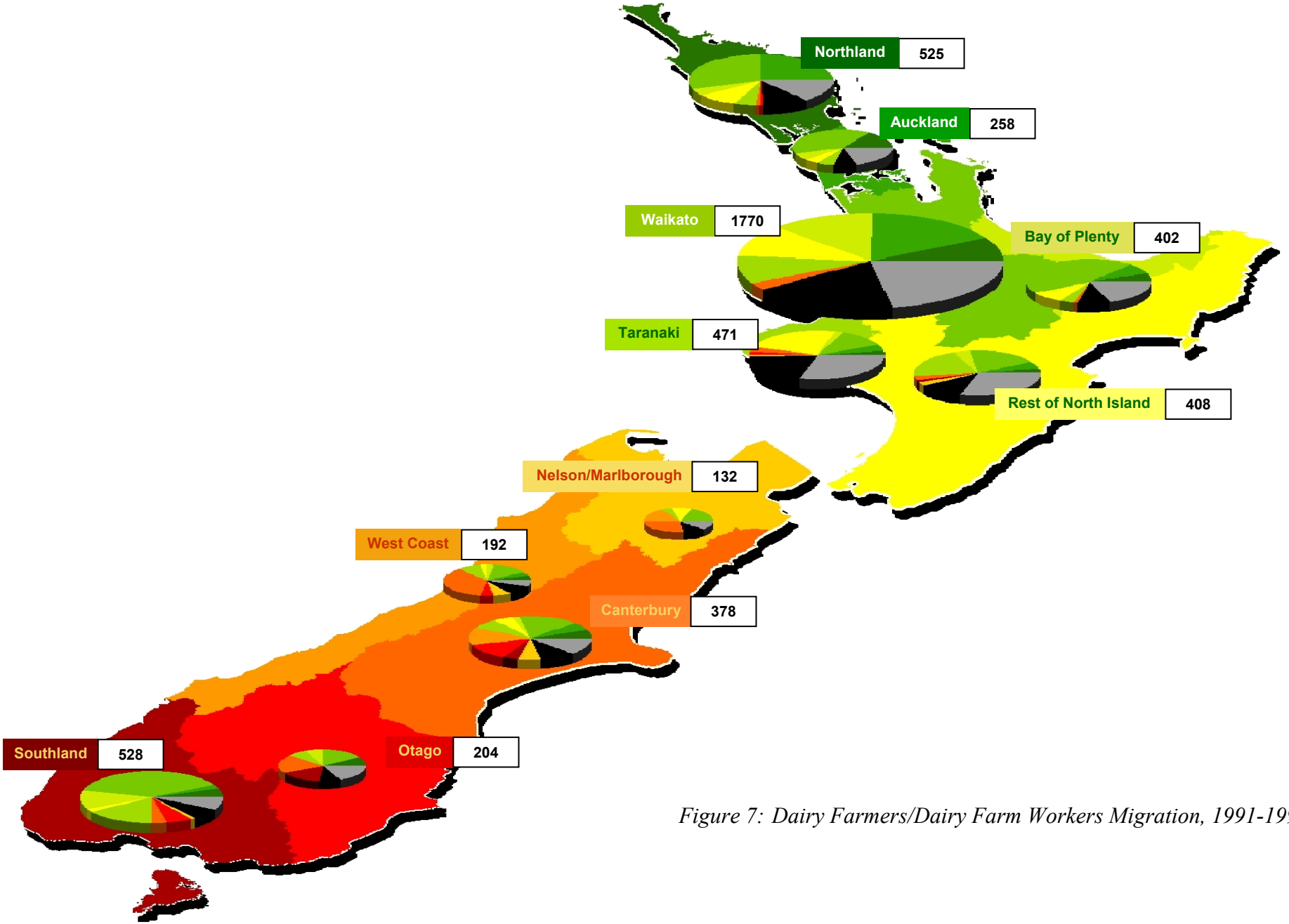

Figure 7: Dairy Farmers/Dairy Farm Workers Migration, 1991-1996

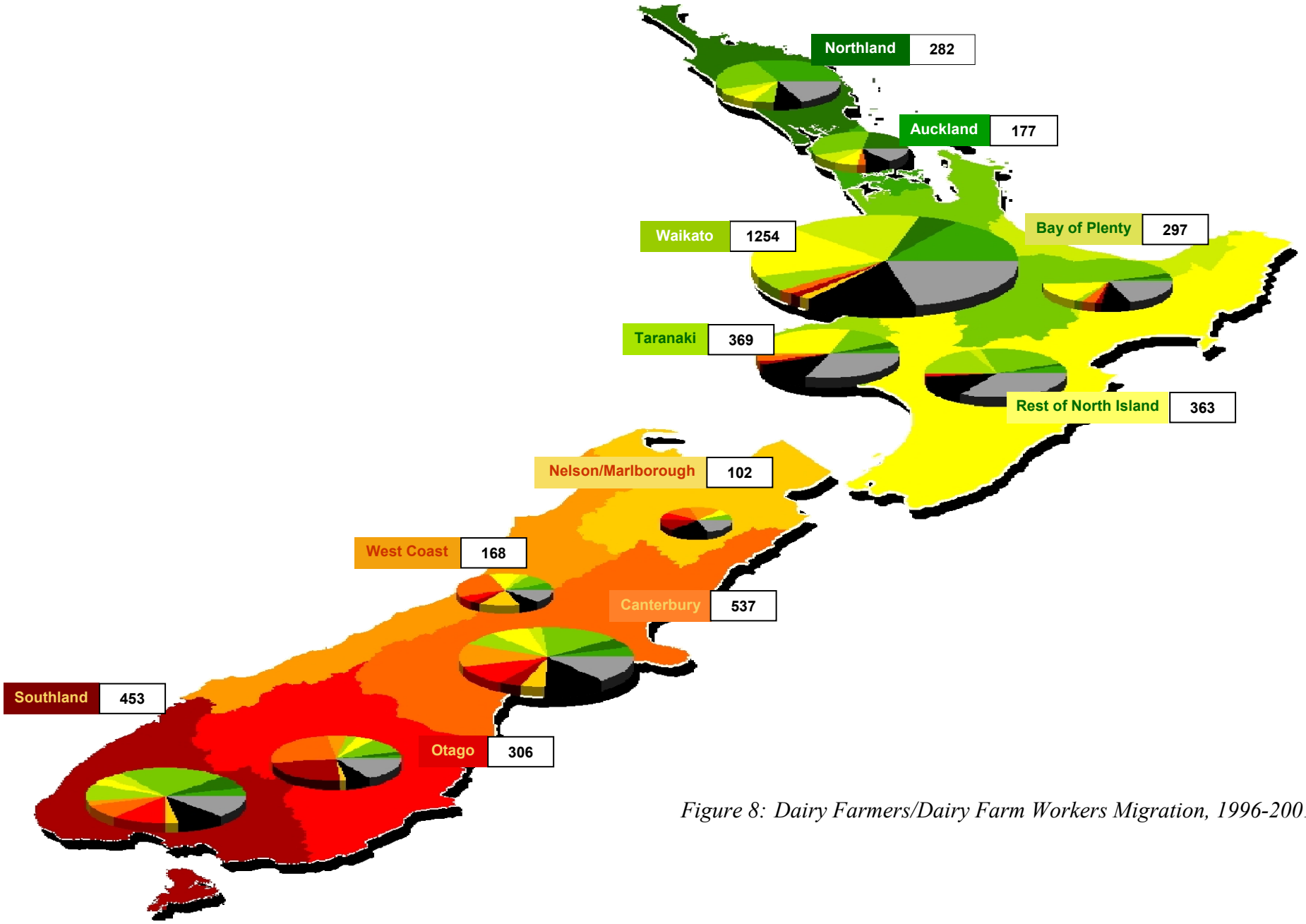

Figure 8: Dairy Farmers/Dairy Farm Workers Migration, 1996-2001

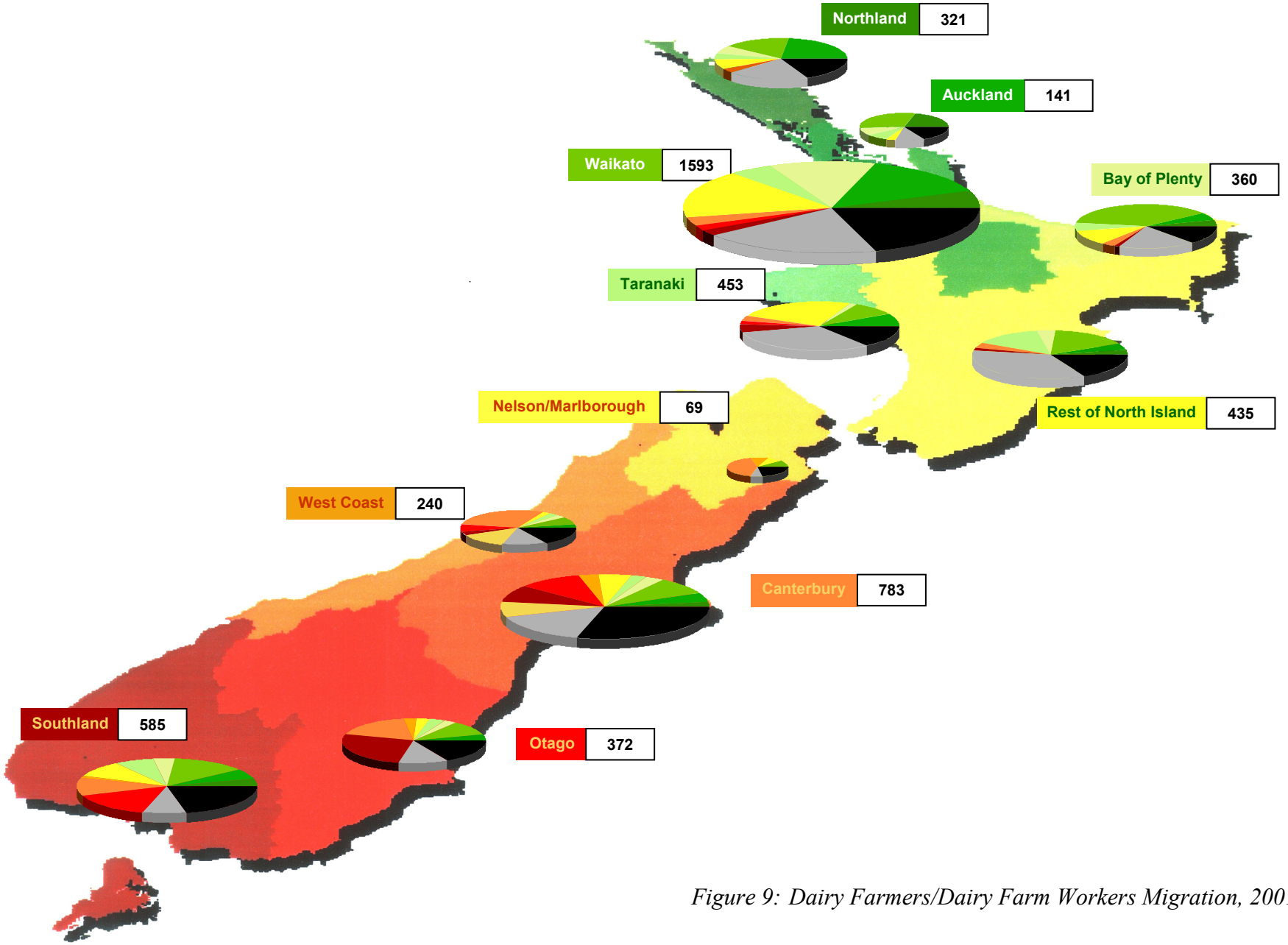

Figure 9: Dairy Farmers/Dairy Farm Workers Migration, 2001-2006

Comparison of the dairy farmers/dairy farm workers population internal migration with that of the wider New Zealand population is difficult. New Zealand as a whole has a very mobile population and, at the time of the 2006 Census, 54.8 percent of the usually resident population, aged five years and over, had moved residence at least once since the previous census in 2001. In comparison, at the time of the 2001 Census, 49.4 percent had recorded a different address from that lived at five years previously. In 2006, young adults were more likely than older people to have moved residence at least once in the five years prior to the census with those aged 20-34 years least likely to be at the same residence (Statistics New Zealand, 2007). Data reported on rural New Zealand from the 2001 Census show that rural adults are far less likely to move than other sectors of the population (Statistics New Zealand, 2001).

At the 2006 Census, one in every 11 people (9.4 percent) were living overseas in 2001 (the corresponding figure from the 2001 Census was 7 percent). Of those who had lived overseas in 2001, more than one in five people (21.5 percent) had been born in New Zealand. As noted earlier, it is impossible to know whether those dairy farmers/dairy farm workers who had been overseas five years previously were returning New Zealanders or imported labour.

In 2006 the Waikato Region had the most mobile regional population with three in every five people (60 percent) having changed their usual residence since the time of the 2001 census. The West Coast Region had the least mobile population during this time with one in every two people (51.4 percent) recording a change of residence.

Net migration flows between regions are derived from how many people indicated they moved into or out of a particular region since the previous Census. *QuickStats* presented a summary of inter-regional movement, but only looked at those people who were living in New Zealand both in 2001 and 2006. These figures show net migration gains in 16 Regional Council areas with the largest net gain recorded in Canterbury. Of the 8,103 persons who moved into Canterbury 1,596 had come from Auckland and 1,338 from Southland (Statistics New Zealand, 2007). Between 2001 and 2006 the dairy farmers/dairy farm workers population of Canterbury increased by 330 persons (see Table 16). The regional gains and losses in respect of the Canterbury dairy farmers/dairy farm workers population are examined in Section 4.4.6.

The increase of dairying in areas such as Southland goes against the normal migration trends for the region. Southland had a net loss of 2,349 persons between 2001 and 2006. The dairy farmers/dairy farm workers population of Southland has increased from 372 in 1991 to 1635 in 2006 with an increase over the latest five years (2001-2006) of 261 people. If movement away from traditional dairying areas is maintained it has the potential to further challenge internal migration trends and predictions.

4.3 Regional characteristics

As noted in Table 17 there are regional differences in farm and herd sizes. There are also regional variations in the operating structures of dairy farms. The labour characteristics and requirements of each region reflect these differences. The following section profiles some of the variations in labour force characteristics for selected regions: Northland, Waikato/Bay of Plenty, and Lower North Island in the North Island; Canterbury, Southland and the West Coast in the South Island. The regions selected are the same as those used by MAF in their *Annual Dairy Monitoring Report*. This report presents short term financial and physical forecasts reflecting the perceptions of farmers, farm consultants and industry representatives. A monitoring process is adopted whereby an average farm for each of several regions

selected is modelled – this provides useful data on the type of farm in each region as well as some employment characteristics.

The tabled information presented for each of these regions in the following section is a summary of labour related data for each of these regions taken from the 2003 and 2006 *Dairy Monitoring Reports* (Ministry of Agriculture and Forestry, 2003, 2006). The way these annual reports were presented changed in 2007 and the *Pastoral Monitoring Report 2007* combined data from the dairy, deer, and sheep and beef sectors. Also, separate regional reports were not published in 2007 (Ministry of Agriculture & Forestry, 2007b). One consequence of these changes appears to be the loss of information on labour issues pertaining to each region, although there was some discussion of labour issues in dairying at national level in the 2007 report (see Table 15).

A detailed analysis of the dairy farmers/dairy farm workers population in relation to this monitoring data was reported in *Future Dairy Farm Employment* and is repeated here along with updated data from the 2006 Census.

4.3.1 Northland

Table 20: Northland Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	***Dairy Monitoring Report 2006***
▪ The model represents an established owner employing some casual labour. ▪ The model continues to represent a husband/wife partnership structure. ▪ Age, health, subdivision pressures and high land prices are cited as reasons for leaving the industry. ▪ Good quality labour has been in short supply in most areas of Northland. ▪ Some farmers are paying premium rates to attract and hold good labour. ▪ There is limited opportunity to increase production further due to labour shortages. ▪ Some farmers who have purchased more land and employed labour have not enjoyed their experience. ▪ They have had difficulties employing labour and have found managing labour not as simple as they had foreseen.	▪ The model represents an established family partnership employing some casual labour. ▪ Even though only 2 to 3 percent of farmers are adopting once-a-day milking, there is an increasing trend to do so. ▪ Many farmers have commented that by adopting once-a-day milking they will continue actively farming for another 10 years, which would not have been the case if they remained with twice-a-day milking. ▪ Labour issues continue to be of concern for the industry. There appears to be an increasing number of farm staff unhappy with their working conditions, particularly from calving up to the end of mating. ▪ Farmers are beginning to appreciate that they have to be more flexible with regard to time off for their staff. This is seen as one of many factors required to entice and retain committed and interested staff. ▪ Good sharemilking jobs are hard to find in Northland and there are limited positions that have good scale of operation. ▪ Family relationships still form a large portion of 50/50 sharemilking jobs throughout Northland.
(Ministry of Agriculture & Forestry, 2003, pp.5-11)	(Ministry of Agriculture & Forestry, 2006, pp.7-14)

At the 2001 Census the dairy farmers/dairy farm workers population numbered 2,259 persons (9 percent of New Zealand total). In 2006 this had fallen by 486 persons to 1,773 (a percentage decrease of 1.4 percent). Northland's share of the total dairy farmers/dairy farm workers population in 2006 was 7.2 percent.

In 2001, Northland had the same percentage in the 35-39 age group, as did the national dairy population. All younger age groups were poorly represented; all older ones better represented. In particular, those over the age of 55 accounted for 18 percent of the Northland dairy farmers/dairy farm workers population compared 15 percent of the national total. In 2006, the Northland dairy farmers/dairy farm workers population remained poorly represented in all younger age groups. The proportion aged over 55 years had increased to 19 percent (compared to 14.7 percent in this group in the total dairy farmers/dairy farm workers population).

In 2001, Northland dairy farmers/dairy farm workers worked longer hours on average than those in other regions. Over 35 percent worked more than 70 hours per week; nationally only 32 percent worked this many hours. In 2006, the percentage working 70 hours or more per week had fallen to 27 percent in Northland and 26 percent nationally.

In 2001, the Northland dairy farmers/dairy farm workers population were not as well qualified, with either vocational or degree qualifications, as the dairy farmers/dairy farm workers population in general. In 2006, the proportion with vocational qualifications had increased to 26 percent (compared to 25 percent in the total dairy farmers/dairy farm workers population). Only 4 percent of Northland dairy farmers/dairy farm workers had degree qualifications in 2006 (compared to 6 percent nationally).

In 2001, 45 percent of Northland dairy farmers/dairy farm workers were 'self-employed without employees', compared to the national average of only 38 percent. This was the highest percentage of any region. Conversely, Northland had the lowest percentages of employers (29 percent) and employees (19 percent) of the regions. In 2006, the Status in Employment distribution had changed to 35 percent self-employed without employees, 28 percent employers and 29 percent employees. The proportion of Northland dairy farmers/dairy farm workers that are employees remains the lowest of all the regions and is much lower than the national figure of 37 percent. The percentage of self-employed without employees also remains the highest in this region.

With fewer employees and the highest percentage of self-employed dairy farmers/dairy farm workers the Northland model continues to represent the most traditional dairy farm operation. The movement to OAD milking may represent a flight away from the hassles of employment (Tipples, 2007).

4.3.2 Waikato/Bay of Plenty

Table 21: Waikato/Bay of Plenty Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	***Dairy Monitoring Report 2006***
▪ The model is representative of seasonal supply dairy farms. ▪ An owner-operator who milks the cows and employs a permanent (single) worker manages the farm. ▪ Availability of farm staff appears to be somewhat variable. Some farmers have found it relatively easy to find staff, while others report continuing difficulties. ▪ Some farm owners with larger herds who employ a number of staff have increased the time off for leave and training to try and attract good quality staff. ▪ The dairy industry, via Dairy Insight, is also putting a major educational push into upskilling those involved in the industry, both farmers and workers. ▪ There continues to be a strong demand for 50/50 sharemilking positions which become available. ▪ Some larger farms have moved from employing a 50/50 sharemilker to employing a lower order sharemilker or a manager on wages.	▪ This model is representative of seasonal supply dairy farms. ▪ An owner-operator who milks the cows and employs a permanent (single) worker manages the farm. ▪ The trend towards once-a-day milking of dairy herds is gradually increasing. While there are only a limited number of farmers on once-a-day milking throughout the entire season, there are significant numbers of farmers who will utilise once-a-day milking in the later part of the season, especially after Christmas. For many, there are greatly enhanced lifestyle benefits with a relatively low impact on milk production. ▪ Anecdotally it would appear that 2005/06 was a particularly tough year for recruiting farm staff for the 2006/07 season. In particular, in contrast to previous seasons there have been fewer applicants for 50/50 sharemilking positions. This may be a reflection of the high cow prices, which make it more difficult for a prospective 50/50 sharemilker to purchase a herd.
(Ministry of Agriculture & Forestry, 2003, pp.12-18)	(Ministry of Agriculture & Forestry, 2006, pp.15-24)

In the combined regions of Waikato and Bay of Plenty there were 10,824 dairy farmers/dairy farm workers at the 2001 census, 41 percent of the New Zealand total. Males were slightly better represented in these regions (67 percent) than was the case nationally (66 percent). In 2006 this had decreased by 948 persons to 9,876 (this represents 1.3 percent decrease). These combined regions continue to represent 41 percent of the New Zealand total dairy farmers/dairy farm workers population.

In 2001, both Waikato (16 percent) and the Bay of Plenty (18 percent) had higher percentages in the 55+ age groups than the national dairy farmers/dairy farm workers population (15 percent). These regions were both poorly represented by those in the 20-24 and 25-29 age groups. In 2006 these regions remained poorly represented in the younger age groups and were over represented in all age groups from 40 years and over.

In 2001, for most categories of Hours Worked, these regions were close to the national averages for dairy farmers/dairy farm workers although only 29 percent worked over 70 hours compared with 32 percent of the national total. The hours worked distribution represented the national average in 2006, as would be expected given that 40 percent of the dairy farmers/dairy farm workers were in the Waikato and Bay of Plenty regions.

Of all regions Waikato/Bay of Plenty had the highest percentage with vocational qualifications (22.7 percent) and the lowest percentage with school qualifications (39.4 percent) in 2001. This had changed in 2006, to 27 percent with vocational qualifications and 36 percent with school qualifications; these remained the highest and lowest regional percentages of each qualification level.

In 2001, a high percentage of dairy farmers/dairy farm workers in these regions were 'self-employed without employees' (42 percent compared with the national figure of 38 percent). This was lower than in Northland and the percentages of employers (31 percent) and employees (20 percent) were correspondingly closer to the national figures of 32 and 24 percent respectively. The percentage of unpaid workers (5 percent) was the same as the national percentage.

In 2006 there was a higher percentage of self-employed and without employees in Waikato/Bay of Plenty (31 percent) than nationally (27 percent). The percentage of employers had remained the same at 31 percent (30 percent nationally) while employees made up 32 percent of the Waikato/Bay of Plenty dairy farmers/dairy farm workers population (37 percent nationally).

The Waikato region is examined in more detail in Section 4.4.

4.3.3 Lower North Island

Table 22: Lower North Island Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	***Dairy Monitoring Report 2006***
▪ The budget models owner-operator farms with some labour employed, and represent an estimated 70-80% of dairy farms, the other 20-30% fitting into the sharemilker or partnership models. ▪ There have been fewer 50/50 sharemilking positions, a continuing trend from previous years. This trend has resulted from farm amalgamations and landowners opting to purchase livestock and employ lower order sharemilkers or managers. ▪ A number of 50/50 sharemilkers have not found positions. ▪ Sharemilking as a path to farm ownership could well be in jeopardy. Equity partnerships could overtake sharemilking, but are not yet established. Owners are trying out different ways of sharing income and expenses, such as 45/55.	▪ The model budgets are for owner/operator farms, with labour employed, and represent an estimated 70 to 80 percent of dairy farms, the other 20 to 30 percent fitting into the sharemilking or equity partnership categories. ▪ Labour continues to be an issue and is considered to be putting some existing farmers off expanding. ▪ There have been very few 50/50 sharemilking positions available, a continuing trend from previous years. This has resulted from farm amalgamations, and farm owners opting to purchase livestock and employ lower order sharemilkers or managers. There is a small but steady interest in equity partnerships as an avenue for people to enter land ownership. ▪ There is an interest in automation from large-scale farming operations, to help address declining skill levels and the shortage of skilled labour/managers. These improvements would make working conditions more attractive for staff and help with retention of staff. ▪ Labour and staffing issues are quoted as some of the major challenges and issues for dairy farming, and are reasons why some people have exited the dairy industry and why others are not expanding. ▪ There is only limited interest in once-a-day milking in the lower North Island (with most of that interest in Taranaki), with those farms considering that option placing high value on lifestyle changes.
(Ministry of Agriculture & Forestry, 2003, pp.20-27)	(Ministry of Agriculture & Forestry, 2006, pp.25-36)

The *Dairy Monitoring Report* amalgamates the regions in the bottom half of the North Island to form this model. It includes the regions of Taranaki, Manawatu, Horowhenua, Wairarapa and southern Hawke's Bay. Using the Census regions a similar amalgamation includes all regions in the North Island, with the exception of Auckland and those already discussed. Combined these regions had a dairy farmers/dairy farm workers population of 6,924, 26.3 percent of the total population in 2001. This population had the same gender balance as the total dairy farmers/dairy farm workers population. In 2006 there were 6,423 dairy farmers/dairy farm workers in the Lower North Island region (a fall of 501 persons since 2001). One of the regions, Hawke's Bay, had increased its dairy farmers/dairy farm workers population by 36 persons since 2001. In 2006 the regional percentage of the national dairy farmers/dairy farm workers population had fallen only marginally to 26 percent.

The differences in characteristics of each of these individual regions render it somewhat meaningless to identify significant features for some variables. In terms of age structure the regions within this amalgamated area varied markedly from each other. Taranaki, for example, had the lowest percentage of 15-24 year old workers (4 percent) of all regions in 2001 (6.5 percent of the total dairy farmers/dairy farm workers population were in this age group). In Manawatu-Wanganui, in contrast, 9 percent of the 2001 dairy farmers/dairy farm workers were aged 15-24 (Tipples *et al.,* 2004).

In 2001, a high percentage of dairy farmers/dairy farm workers in the Lower North Island combined region had no qualifications – 31.7 percent compared to the national figure of 28.9 percent. In 2006, the Lower North Island had a higher percentage with no qualifications, than most other regions. It was also the region with the lowest percentage with vocational qualifications (22 percent compared with 25 percent nationally).

In 2001 these regions had slightly fewer part time workers (17.5 percent) and greater numbers working 70+ hours (33.5 percent) than the dairy farmers/dairy farm workers population overall (19 percent and 32 percent respectively).

In 2001, as with other North Island regions a high percentage of the dairy farmers/dairy farm workers were 'self-employed without employees' (43 percent). There were, however, slightly more employees, and correspondingly, fewer unpaid family workers than in other North Island regions. In 2006 31 percent of dairy farmers/dairy farm workers in the lower North Island were self-employed without employees, 34 percent were employees (37 percent nationally) and 28 percent were employers (30 percent nationally).

4.3.4 Canterbury

Table 23: Canterbury Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	*Dairy Monitoring Report 2006*
▪ The model represents about 600 seasonal supply dairy farms ▪ There are very few large sharemilking positions in Canterbury. Corporate owners and owners of large farms are choosing to employ managers or equity managers. ▪ Many in the industry are concerned that, over time, this may impact seriously on skilled dairy labour with a greater requirement for overseas workers. One of the reasons that motivated young people to stay in the industry is so that they can work toward a large sharemilking position and then buy their own farm. This pathway seems to be under serious pressure. ▪ If it were not for overseas workers the industry would already be seriously under-staffed. ▪ The growth in dairying and the continued development has put a number of agricultural service providers under pressure, including irrigation companies and vets.	▪ The model is based on a sample of 20 owner-operated farms, ranging from 300 to 1500 milking cows, supplying Fonterra's Clandeboye factory. The surveyed farms represent a similar geographic and size distribution to the statistical population. ▪ Labour costs are forecast by farmers to rise a further 8 percent, but industry people believe this figure could be on the low side, given the very tight labour market and new labour legislation that effectively means more staff are required to carry out the same amount of work. ▪ Labour shortages continue to affect the industry. Many farmers are questioning where the labour will come from to milk the predicted lift in cow numbers over the next few years. ▪ Young workers with no experience are able to get work in many industries and the minimum wage is effectively around $25,000 per annum, up from $22,000 last year. ▪ More workers from overseas are being sought and are highly valued. The trend of recent years to once-a-day milking has stabilised.
(Ministry of Agriculture & Forestry, 2003, pp.28-35)	(Ministry of Agriculture & Forestry, 2006, pp.37-48)

There were 1857 dairy farmers/dairy farm workers in Canterbury, 7.1 percent of the New Zealand total at the 2001 Census. The Canterbury dairy farmers/dairy farm workers population had a larger percentage (69 percent) of males employed than in the national figures (66 percent). The dairy farmers/dairy farm workers population in Canterbury increased by 330 persons between 2001 and 2006, and now represents 8.8 percent of the national total.

In 2001, Canterbury was particularly well represented in the younger age groups. Over 15 percent of its dairy farmers/dairy farm workers population was in the 15-19 year age group. In 2006, this age group represented 14 percent of the Canterbury dairy farmers/dairy farm workers population. This compared with national dairy farmers/dairy farm workers figures of only 7 percent in 2001 and 8 percent in 2006. Those in the 20-24 and 25-29 year groups were also better represented in 2001 and in 2006 Canterbury had a higher percentage of dairy farmers/dairy farm workers in all age groups up to and including 35-39 years.

In 2001, Canterbury had the lowest percentage with no qualifications (25.1 percent) and the highest percentage with both school (42.9 percent) and degree (5.5 percent) qualifications. These compare with national percentages of 28.9 percent with no qualifications, 39.9 with school qualifications and 3.9 percent with degrees. In 2006, Canterbury maintained its position with the lowest percentage with no qualifications and the highest percentage with degree qualifications. Twenty-five percent of Canterbury dairy farmers/dairy farm workers had no qualification (compared with 28 percent nationally), 39 percent had school qualifications (38 percent nationally) and 8 percent had degree qualification (6 percent nationally) in 2006.

In 2001, Canterbury closely profiled the overall dairy farmers/dairy farm workers population in respect of hours worked. In 2006, the percentage of part time workers in Canterbury was the same as nationally (20 percent), but Canterbury had a lower percentage working 30-39 hours (5 percent compared to 6 percent nationally), 40-49 hours (11 percent compared to 13 percent nationally) and a higher percentage working 50-59 hours (18 percent compared to 15 percent nationally).

In 2001, the status in employment distribution of Canterbury dairy farmers/dairy farm workers differed markedly from the national dairy farmers/dairy farm workers population. Only 12 percent of those in Canterbury were 'self-employed without employees' (nationally 38 percent). Forty-six percent were paid employees, compared to only 24 percent nationally. In 2006 the number of paid employees had further increased to represent 66 percent of the Canterbury total (compared to 37 percent nationally in 2006). There was a corresponding decrease in the percentage of Canterbury dairy farmers/dairy farm workers who were self-employed without employees (7 percent compared to 27 percent nationally). Canterbury had the lowest percentage of unpaid family workers (3 percent) of any region in 2006.

4.3.5 Southland

Table 24: Southland Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	***Dairy Monitoring Report 2006***
▪ Owner-operators ▪ This model has increased significantly in size, stocking rate and production over several years. ▪ Many farms in this model have been producing milk for less than 5 years. The size and production from these farms is still increasing. ▪ There is a trend by owners to engage equity managers. ▪ Reduced payouts have resulted in less variable percentage for lower order sharemilking agreements. ▪ People are opting for a contract based on a set payment per kilogram of milksolids produced. ▪ Farmers are successfully continuing to adopt employment contracts and OSH requirements.	▪ Owner-operators ▪ Labour costs on average remained similar to 2004/05, with a small decrease in casual staff. Farmers realise the importance of good staff to the success of their business. ▪ Acquiring skilled and truly experienced labour is still a problem. ▪ Sharemilkers are in short supply with a large number deciding to sell out with the high stock prices, and the difficulties in borrowing money to either expand or even start. There is a disparity between bank cow values and the actual market rate, affecting sharemilkers' equity calculations. This has meant some farm owners were forced into buying cows and putting on lower-order sharemilkers or farm managers
(Ministry of Agriculture & Forestry, 2003, pp.36-43)	(Ministry of Agriculture & Forestry, 2006, pp.49-58)

In 2001, the Southland region had 1374 dairy farmers/dairy farm workers, 5.2 percent of the total population. A higher percentage of females were dairying in Southland (36 percent) than nationally (34 percent). The number of dairy farmers/dairy farm workers in Southland increased by 261 persons in 2006 to account for 6.6 percent of the national total.

In 2001 Southland had a younger dairy farmers/dairy farm workers population than New Zealand in general with all age groups up to, and including, 35-39 years better represented. In 2006 there were also a higher percentage of Southland dairy farmers/dairy farm workers in the 40-44 year age group (14.7 percent) than nationally (13.8). There were correspondingly fewer Southland dairy farmers/dairy farm workers in the older age groups with 9.9 percent aged 45-49 years, 5.9 percent aged 50-54 years and 7 percent aged 55 years and over (nationally there were 12.2 percent, 8.8 percent and 14.7 percent in each of these age groups).

In both 2001 and 2006 Southland was close to the dairy farmers/dairy farm workers average in terms of highest qualifications held.

In 2001 39 percent of Southland dairy farmers/dairy farm workers worked over 70 hours per week compared to a national average of only 32 percent. Southland also had a slightly higher percentage of part time workers. In 2006 the percentage of part time workers in Southland (22 percent) remained slightly higher than for the national dairy farmers/dairy farm workers population (20 percent) as did the number working more than 70 hours per week (28 percent in Southland compared to 26 percent nationally).

Of all regions Southland resembled Canterbury in respect of Status in Employment, although Canterbury had a higher percentage of employees and Southland a higher percentage of 'self-employed without employees' in 2001. In 2006 49 percent of Southland dairy farmers/dairy farm workers were employees (compared to 66 percent in Canterbury and 37 percent nationally), 34 percent were employers (compared to 24 percent in Canterbury and 30 percent nationally) and 13 percent were self-employed without employees (compared to 7 percent in Canterbury and 27 percent nationally). Also, similar to Canterbury there were a lower percentage of unpaid family workers in Southland (4 percent) in 2006.

4.3.6 West Coast

Table 25: West Coast Dairy Farming Labour Issues, 2003 & 2006

Dairy Monitoring Report 2003	***Dairy Monitoring Report 2006***
▪ Gradual increase in both farm size and cow numbers during the past eight-ten years. ▪ There is recognition of the need for more formal qualifications in farming now, with younger staff particularly confident that they can make a career in dairying. ▪ There are good opportunities for trainees coming out of these programmes and, with farm numbers increasing, the employment environment on the West Coast is looking bright. ▪ There is a growing awareness and acceptance amongst employers that they need to "lift their game" in terms of employment relationships if they are to retain good employees. In particular, working conditions and employment relationships will need to be worked on to achieve this.	▪ Once daily or 16-hour milkings have again been used strategically by a number of farmers seeking to match feed supply and ease labour issues. ▪ Labour problems are still tending to be an issue. Some farms, especially those with a poor employment reputation, are still short of labour. Low national unemployment levels are forcing farm owners to either employ below par staff or pay high wages to attract and retain better staff. As a result, there seems to be a trend towards more automated milking processes. ▪ Once again, with pressure on budgets, there has been a trend towards employed staff rather than utilising sharemilkers. ▪ Average farm size continues to increase as farmers continue to bring more land into production and conversions to dairying continue. Increased farm size results in economy of scale, but also exaggerates labour problems. ▪ Agricultural education activities have continued at high levels, with AgITO training courses and agreements at good levels. This reflects the continued growth in the dairying sector on the West Coast, together with an improved public perception of farming.
(Ministry of Agriculture & Forestry, 2003, pp.44-47)	(Ministry of Agriculture & Forestry, 2006, pp.59-62)

The West Coast of the South Island had 666 (2.5 percent) of the national dairy farmers/dairy farm workers population in 2001. Thirty-six percent of the West Coast dairy farmers/dairy farm workers population were female; the same percentage as in Southland. This is higher

than the national average in the dairy farmers/dairy farm workers population. The number of dairy farmers/dairy farm workers on the West Coast increased by 90 persons in 2006 to make up 3 percent of the national dairy farmers/dairy farm workers population.

In 2001, the West Coast had higher percentages in the 35-39 and 40-44 age groups and lower percentage in all age groups below these. The older age categories had similar percentages as the national dairy farmers/dairy farm workers population. In 2006, there was also a higher percentage in the 45-49 years age group.

The West Coast region had the lowest percentage of its workforce with vocational qualifications (16.6 percent). In the national dairy farmers/dairy farm workers population 20.7 percent had vocational qualifications. The West Coast region was most similar to Northland and the Lower North Island regions in respect of qualifications held. In 2006 with 22 percent of the West Coast dairy farmers/dairy farm workers population had vocational qualifications (the same as the Lower North Island regions, but lower than the national percentage of 25 percent). In both Northland and the West Coast only 4 percent had a degree qualification (nationally 6 percent).

In 2001, the dairy farmers/dairy farm workers population on the West Coast worked the longest hours of any region with 47 percent working over 70 hours per week. This compared to the national figure for these hours of only 32 percent. The same percentage (11 percent) as nationally worked 40-49 hours per week; all other hour categories were under represented in the West Coast region. In 2006, 35 percent of West Coast dairy farmers/dairy farm workers worked more than 70 hours per week (26 percent nationally). There were fewer part time workers (18 percent compared to 20 percent nationally) and fewer workers in all other age categories except the 60-69 hours category (20 percent in both West Coast and nationally).

In 2001, the West Coast region resembled North Island dairy regions in terms of Status in Employment with 39 percent of the dairy farmers/dairy farm workers workforce self-employed without employees. The proportion of self-employed without employees had had fallen to only 22 percent in 2006 on the West Coast (the North Island regions were all around 30 percent). Also, in 2006 the West Coast region had a greater proportion of employees (39 percent) than the North Island regions (around 30 percent).

4.3.7 Summary of regional review

Traditional models of dairy farms were of owner operators who worked for themselves, with their families, and employed few workers. Some regions, such as Northland, are maintaining this model, but others like Canterbury and Southland, are changing because of dairy conversions and farm amalgamations.

Employment issues vary from the more traditional regions, where they do not need or want workers, to the newer regions where farms are quite different – larger and dependent on employed non-family staff. Some farmers in the more traditional areas have sought to avoid the hassles of employing staff by trying OAD milking and they report their experiences very favourably.

The modern New Zealand dairy model can probably best be described as either the older Waikato, traditional family farming, North Island model, or the new Canterbury, South Island one, based on limited family involvement, huge herd sizes, non traditional sources of capital, relatively well qualified management and an employed labour force, with a substantial element of migrant labour. The details of this contrast are given in the next section.

4.4 Waikato vs. Canterbury

The regional models described in Section 4.3 showed considerable variation in the structure and operation of dairy farms and in the characteristics of the dairy farmers/dairy farm workers population. This final section of the report examines in more detail the differences between Waikato and Canterbury Regions in respect of their 2006 dairy farmers/dairy farm workers population. A notable difference between these two regions is the average herd size with 362 cows in the South Auckland/Central Plateau/Western Uplands region and 644 in Canterbury. Canterbury regions, and part of Waikato, also had the highest average cows per hectare in New Zealand: South Canterbury had 3.20 average cows per hectare followed by North Canterbury with 3.14 and South Auckland with 2.98 (Livestock Improvement, 2006).

As Table 16 showed, Waikato remained the largest dairy area in New Zealand with 34.2 percent of the dairy farmers/dairy farm workers population in 2006. In 2006 Canterbury was the third largest dairy region with 8.8 percent of the dairy farmers/dairy farm workers population (Taranaki was the second most popular dairying region with 14.7 percent). Canterbury was ranked only fifth in 2001, with 7.1 percent of the total dairy farmers/dairy farm workers population (see Table 16).

Waikato and Canterbury are important regions in respect of the three types of rural area discussed in Section 3.1. According to *New Zealand: An Urban/Rural Profile* these two regions contained approximately one third of all people living in areas with moderate urban influence: Waikato with 21,279 people (15.7 percent), and Canterbury with 19,983 people (14.8 percent). The Waikato region also had the largest number of people living in rural areas with low urban influence (46,704 people) followed by Northland (37,560 people) and Canterbury (21,891 people). Although the West Coast had the highest proportion of people living in highly rural/remote areas (3,801 people or 12.5 percent) Canterbury had the greatest actual number of people (13,794 people or 2.9 percent), followed by Waikato (11,406 people or 3.2 percent) (Statistics New Zealand, n.d.).

The following section presents a comparison of the Waikato and Canterbury dairy farmers/dairy farm workers populations according to their Age, Sex, Highest Qualification, Status in Employment and Hours Worked. Because over a third of the dairy farmers/dairy farm workers are located in the Waikato Region this region closely matches the national distribution in respect of most of these variables.

4.4.1 Age

The age distribution (in percentages) of the Waikato, Canterbury and total New Zealand dairy farmers/dairy farm workers population are shown in Table 26. A notably higher percentage of Canterbury dairy farmers/dairy farm workers are in the younger age groups: those aged 15-29 years made up 40.7 percent of the Canterbury dairy farmers/dairy farm workers population, 21 percent of the Waikato, and 25.1 percent of the total dairy farmers/dairy farm workers population. In Waikato 16.2 percent were aged 55 years and over. This is slightly higher than the national figure of 14.7 percent and considerable higher than the 6.9 percent of the Canterbury dairy farmers/dairy farm workers aged who were aged 55 years and over.

Table 26: Age Distribution Waikato & Canterbury, 2006 (percentages)

Age	Waikato	Canterbury	Total dairy farmers/dairy farm workers
15-19 years	6.0	14.0	7.9
20-24 years	6.8	12.8	7.8
25-29 years	8.2	13.9	9.4
30-34 years	11.8	14.6	12.0
35-39 years	13.2	13.6	13.3
40-44 years	15.2	10.3	13.8
45-49 years	13.2	8.2	12.2
50-54 years	9.5	5.8	8.8
55 and over years	16.2	6.9	14.7
TOTAL	100	100	100

4.4.2 Sex

The male-female percentages of dairy farmers/dairy farm workers were the same in each of these regions with 67 percent male, 33 percent female (total dairy farmers/dairy farm workers population balance in 2006 was 66 percent male, 34 percent female).

4.4.3 Highest qualification

The highest qualifications held by the 2006 Waikato, Canterbury and national dairy farmers/dairy farm workers population are shown in Table 27. There are no significant regional differences in the highest qualification held by the dairy farmers/dairy farm workers populations. The slightly higher percentage of Waikato dairy farmers/dairy farm workers with no qualifications may be linked to greater numbers in the older age groups in Waikato. Similarly, the higher percentage of Canterbury dairy farmers/dairy farm workers with degree qualifications may also be associated with the greater numbers in the 20-39 year age groups in Canterbury.

Table 27: Highest Qualification Waikato and Canterbury, 2006 (percentages)

Highest Qualification	Waikato	Canterbury	Total dairy farmers/dairy farm workers
No Qualification	28	25	28
School Qualification	37	39	38
Vocational Qualification	26	25	25
Degree	6	8	6
Unidentified/Not Stated	4	3	3
TOTAL	100	100	100

4.4.4 Status in employment

Status in employment for each of these regions is shown in Table 28. The Waikato dairy farmers/dairy farm workers population closely resembles status in employment distribution

for the total dairy farmers/dairy farm workers population (understandable as that region has 34 percent of the dairy farmers/dairy farm workers population). Waikato however has a smaller percentage of paid employees (31.7 percent) and a slightly larger percent of self-employed (32.1 percent) workers than the national average (37.4 and 27 percent respectively). There is evidence that this employment structure is changing as in 2001 only 20 percent of the dairy farmers/dairy farm workers population in the combined Waikato/Bay of Plenty Region were employees and 42 percent were self-employed without employees.

Table 28: Status in Employment Waikato and Canterbury, 2006 (percentages)

Status in Employment	Waikato	Canterbury	Total dairy farmers/dairy farm workers
Paid Employee	31.7	65.8	37.4
Employer	30.5	24.1	29.5
Self-employed and without Employees	32.1	7.0	27.0
Unpaid Family Worker	5.2	2.7	5.5
Not Stated	0.5	0.4	0.6
TOTAL	100.0	100.0	100.0

The distribution by status in employment also changed in Canterbury between 2001 and 2006. Over this five year period the proportion of employees increased from 46 percent to almost 66 percent, whilst the 'self-employed without employees' group fell from 12 percent in 2001 to only 7 percent in 2006. As Table 28 shows, status in employment for Canterbury dairy farmers/dairy farm workers varies considerably from the national distribution of 37.4 percent employees, 29.5 percent employers, 27 percent self-employed and 5.5 percent unpaid family workers.

4.4.5 Hours worked

The hours worked by the dairy farmers/dairy farm workers of Waikato, Canterbury and nationally are shown in Table 29. The proportion of Waikato dairy farmers/dairy farm workers in each 'hours worked' category closely match the national percentages. Waikato had slight lower percentage of part time workers and those working 50-59 hours and slightly higher percentage in all the other 'hours worked' categories.

Table 29: Hours Worked Waikato and Canterbury, 2006 (percentages)

Hours Worked	Waikato	Canterbury	Total dairy farmers/dairy farm workers
PT	19	20	20
30-39	6	5	6
40-49	13	12	13
50-59	15	18	15
60-69	21	20	20
70+	26	25	26
TOTAL	100	100	100

The same proportion of Canterbury dairy farmers/dairy farm workers population as nationally worked part time (20 percent) and 60-69 hours (20 percent). Slightly fewer Canterbury dairy farmers/dairy farm workers worked 30-39 hours, 40-49 hours and 70+ hours than nationally. Table 29 shows that a higher percentage of Canterbury dairy farmers/dairy farm workers worked 50-59 hours (18 percent) than was the case in Waikato or nationally (both 15 percent).

4.4.6 Migration

Figure 9 showed the location of the 2006 dairy farmers/dairy farm workers population in 2001. There were some marked differences between Waikato and Canterbury with respect to the mobility of their dairy farmers/dairy farm workers populations. As Table 19 showed, Waikato was more stable (19 percent movement) than Canterbury (36 percent movement). The detailed movements in and out of each of these regions are shown in Figure 10 and Figure 11.

The centre circle in Figure 10 and Figure 11 represent each region, with the total 2006 dairy farmers/dairy farm workers population of that region given. The lower set of figures show how many of those 2006 dairy farmers/dairy farm workers were in that region five years previously, how many had moved in since 2001 and how many had moved out since 2001 (in brackets). The solid lines show the numbers of those recorded for each region in 2006 who had been in other regions in 2001. The dotted lines in the diagram represent outward movement from each region and show how many 2006 dairy farmers/dairy farm workers were recorded in other regions in 2001.

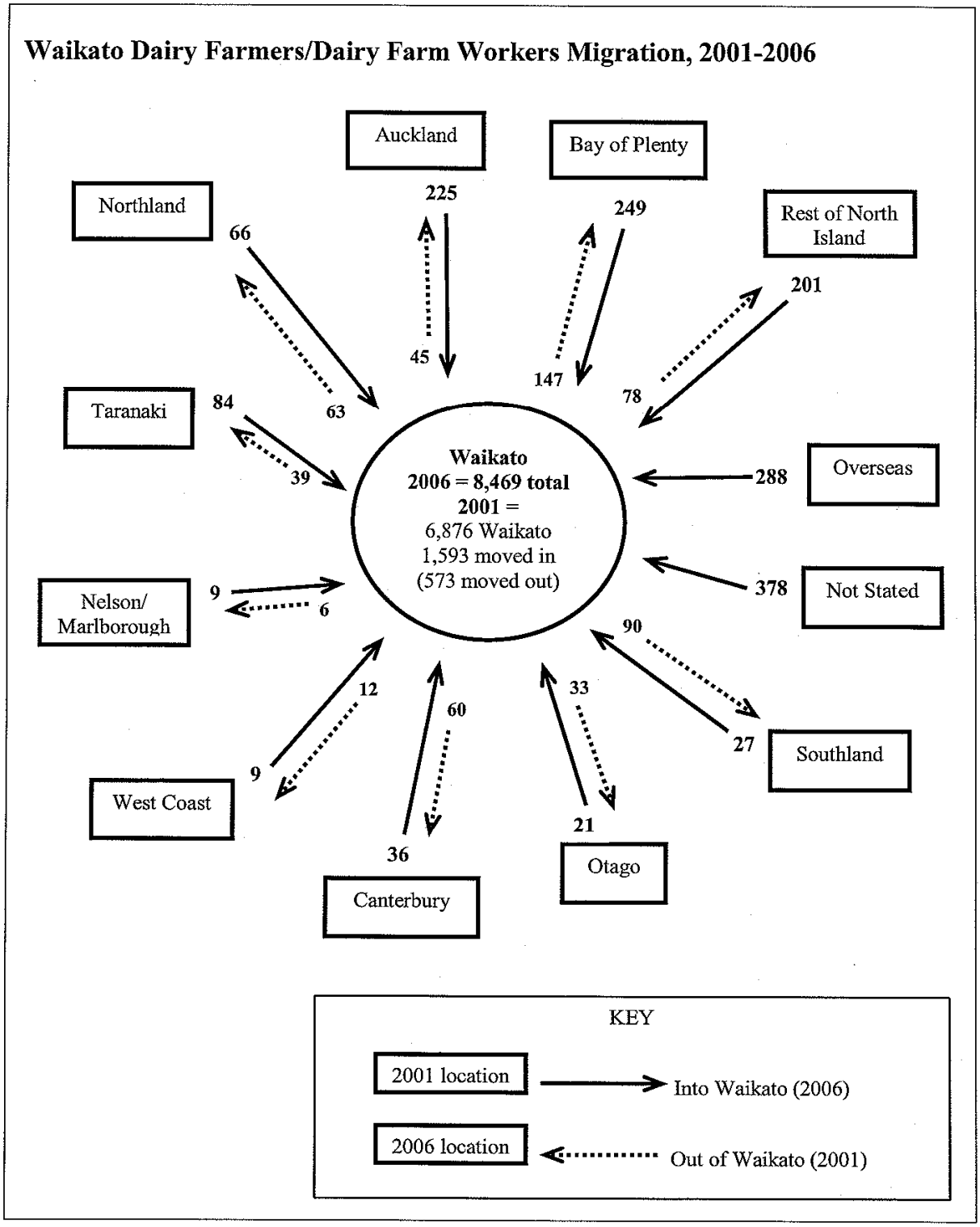

Figure 10: Waikato Dairy Farmers/Dairy Farm Workers Migration, 2001-2006

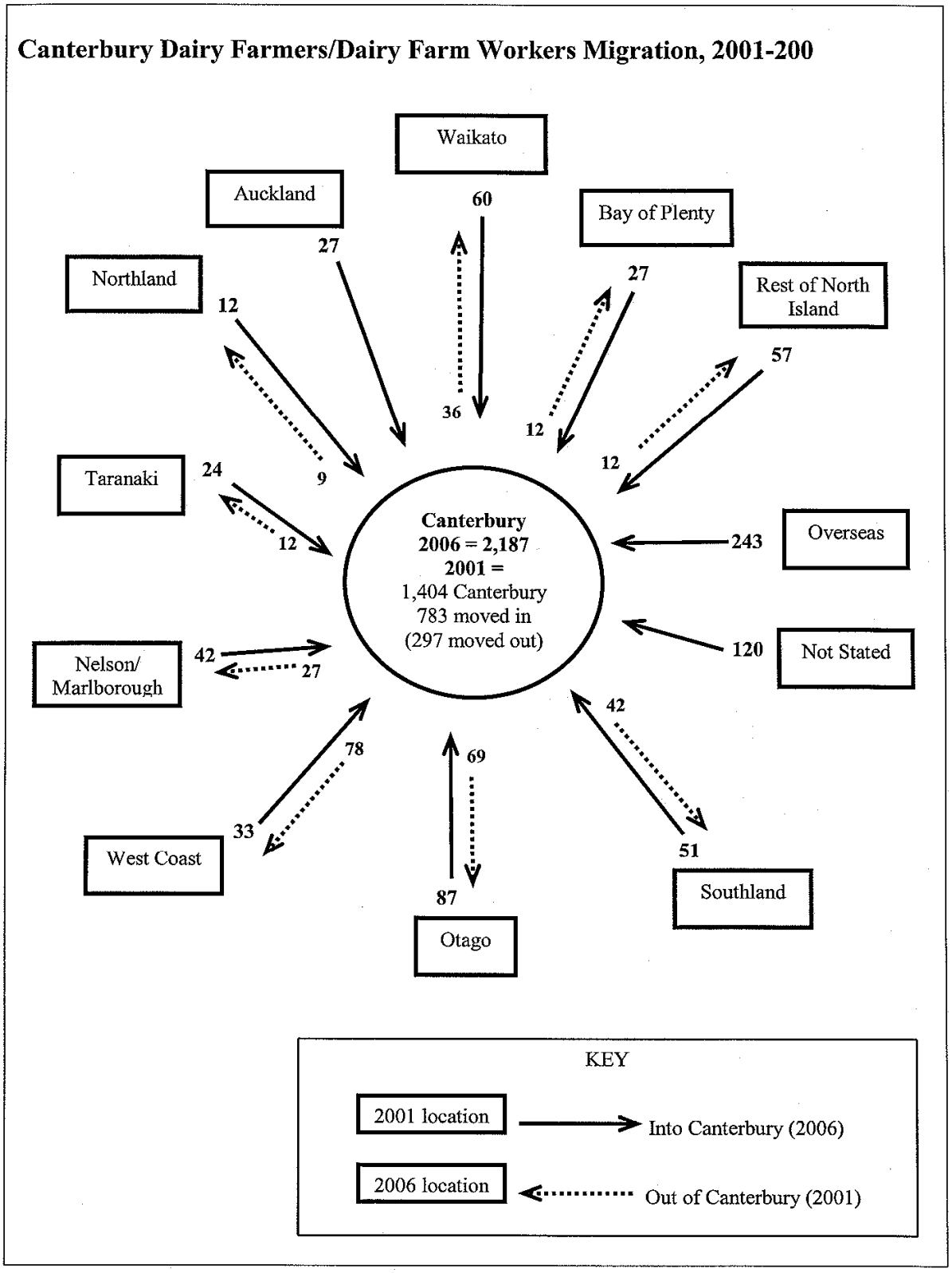

Figure 11: Canterbury Dairy Farmers/Dairy Farm Workers Migration, 2001-2006

Waikato

The total dairy farmers/dairy farm workers population of Waikato in 2006 was 8,469. Of these, 6,876 (81 percent) had been in Waikato and 1,593 (19 percent) had been in other regions five years previously. Five hundred and seventy three of the dairy farmers/dairy farm workers recorded in other regions in 2006 had been in Waikato in 2001. This movement into and out of Waikato is shown in Figure 10. The majority of movement into the Waikato region was from neighbouring North Island regions with 249 coming from the Bay of Plenty, 225 from Auckland, 201 from the Rest of the North Island, 84 from Taranaki and 66 from Northland. The biggest movement out of Waikato was to the Bay of Plenty (147 people). For all North Island regions there were more people moving into Waikato than there were moving out although the exchange between Northland and Waikato was almost equal with 66 dairy farmers/dairy farm workers moving from Northland to Waikato and 63 moving in the other direction.

There was movement out of Waikato into all the South Island regions with 90 dairy farmers/dairy farm workers going to Southland, 60 to Canterbury, 33 to Otago, 12 to the West Coast and six to Nelson/Marlborough. The movement into Waikato from South Island regions was not as pronounced with only 36 coming from Canterbury, 27 from Southland, 21 from Otago and nine each from the West Coast and Nelson/Marlborough. The only region from which Waikato gained was Nelson/Marlborough (nine dairy farmers/dairy farm workers into Waikato and six out).

There were 288 dairy farmers/dairy farm workers in Waikato in 2006 who had been overseas in 2001 (this represents over half of the North Island total of 519 dairy farmers/dairy farm workers from overseas in 2006, but is only just over 3 percent of Waikato dairy farm workers – see Figure 5).

Canterbury

The total dairy farmers/dairy farm workers population of Canterbury in 2006 was 2,187. Of these, 1,404 (64 percent) had been in Canterbury and 783 (36 percent) had been in other regions five years previously. Regional data showed that 297 dairy farmers/dairy farm workers in other regions in 2006 had been in Canterbury in 2001. The total movement into and out of Canterbury is shown in Figure 11. As might be expected a significant proportion of the movement into and out of Canterbury was between neighbouring South Island regions of Otago, Nelson/Marlborough and the West Coast. There was also an exchange of dairy farmers/dairy farm workers between Canterbury and Southland (51 from Southland into Canterbury and 42 to Southland from Canterbury) between 2001 and 2006. Of the South Island regions the West Coast was the only one to which Canterbury demonstrated a net loss (78 people out of, and only 33 into the region).

Of the 2006 Canterbury dairy farmers/dairy farm workers population 60 people had been in Waikato in 2001, 57 in the rest of the North Island, 27 in Auckland and 27 the Bay of Plenty, 24 in Taranaki and 12 in Northland. The movement out of the Canterbury region to the North Island was not as significant, with Waikato the most common destination (36 persons), followed by only 12 persons to Taranaki, the Bay of Plenty and the Rest of the North Island. Nine dairy farmers/dairy farm workers in Northland in 2006 had been in Canterbury in 2001 and there were no ex-Canterbury dairy farmers/dairy farm workers in Auckland in 2006.

There were 243 dairy farmers/dairy farm workers in Canterbury in 2006 who had been overseas in 2001 (this represents over half of the South Island total of 462 dairy farmers/dairy farm workers from overseas in 2006, but is 11 percent of Canterbury dairy farm workers – see Figure 5).

5 Conclusion

5.1 Employment trends in dairy farming in New Zealand, 1991-2006

This summary of the foregoing report only draws out the main trends. The period 1991-2006 saw an initial increase in the occupation dairy farmer/dairy farm worker, but since 1996 the number engaged has declined steadily, while its importance in the New Zealand economy has continued to grow.

The census information analysed show up a number of disturbing trends. First, in terms of age, the industry has continued to recruit good numbers of younger workers, particularly in the age range of 15-24, but then fails to hold them as they get older. In comparison to the New Zealand population as a whole, dairy people are under-represented in the age group 20-24 and all age groups aged 50 or more. Two consequences are likely, dairy farming has been a relatively young person's occupation. With the ageing of the occupation, willingness to change and innovate may be reduced. Further, as the numbers available in the youth segment of the labour force are declining for demographic reasons, replacement of the current dairy labour force is going to become more problematic. Some of these difficulties may be exacerbated by a perception that achievement of farm ownership by individuals is becoming increasingly unrealistic as a potential goal; and by an increasing sense of isolation which kicks in, in remoter rural areas, when children reach secondary school age and may have to leave the district for their secondary schooling. More urban areas also present greater employment opportunities for school leavers.

Besides ageing of the dairy farming occupational group, its gender balance has not changed much. The proportion of females in the dairy labour force has gone down slightly, while in the New Zealand labour force as a whole it is increasing.

In terms of levels of education achieved the dairy farming occupation is improving slowly, but overall levels are lower than for the population at large, which is another factor that may impede the industry's concern to improve its productivity.

Two features distinguish dairy farming as an occupation from other New Zealand occupations. They are the status in employment of dairy farm owners and workers, and the hours which they work. In terms of status in employment, the dairy occupations have been experiencing substantial changes. Traditionally dairy farming was an occupation with a large degree of self-employment. Over the period 1991-2006, the proportion of dairy farm owners and workers who were 'Self-employed without employees' fell from 52 percent to 27 percent. The number of employers has remained fairy stable, but the number of paid employees has gone up from 18 percent to 37 percent nationally and to 66 percent in Canterbury. Further, these changes are accelerating. The high percentages of 'dairy farm employers' and 'self-employed without employees' distinguished dairy farming from main stream employment in which to be a 'paid employee' was the norm (in 2006, 76 percent of the population actively engaged were 'paid employees', only 7.2 percent 'employers' and 11.9 percent 'self-employed without employees').

One unfailing constant of dairy farming is the long hours of work that all occupational groups undergo. While there have been slight reductions in the proportions working over 70 hours per week between 2001-2006, little has really changed. In 2001, 51 percent of those in the occupational group dairy farm owner/dairy farm worker worked 60 or more hours per week. In 2006 that was 46 percent. But for all occupations, it was only 10 percent of the New Zealand total. The modal hours worked for all occupation was 40-49 per week, which was 49 percent of the population. For dairy farming, it was 70 hours per week, which was 26 percent

of the dairy population. The self-employed without employees exploited themselves most with 29 percent reporting they worked over 70 hours per week.

The other distinguishing feature of dairy farming is the high degree of 'churn' in the industry. While the New Zealand population as a whole is very mobile, dairy farming for a land-based industry seems unusually transitory. While traditional dairy farming can be found most often in Waikato and Northland, recent industry developments have seen dairy farmers and dairy farm employees moving into the South Island. Even those movements have not been sufficient to staff the rapidly growing dairy farming industries of Canterbury and Southland, and have had to be supplemented by a significant number of overseas immigrants.

5.2 Changes and the future

The farm labour crisis has existed since about 2000. One could argue that it is no longer a crisis but an established feature of New Zealand farming, similar to the situation in the 1960s before the Agricultural Development Conference (Tipples, 2004). Perhaps the industry should get over looking at the situation as a crisis and reframe the problem as an opportunity to adopt new systems and technologies to do away with the need for so much labour. It must be recognised that the industry is currently going through a period of expansion, which is placing extra stresses on the labour supply. Recent headlines from *The Press* (Christchurch) show these features: "Dairy industry seeks 3000 new workers" (Morgan, 2008). However, this is set in a context of ongoing low unemployment "Low unemployment makes hunt for skilled staff hard" (Brown, 2007).

So one of the solutions being tried is to import migrant workers, which has long been a Canterbury solution. In 2004 the use of Pacific Island labour was suggested to put some money into their economies through remittances (Tipples *et al.*, 2004). That does not seem to have happened extensively in dairy farming although there has been some take-up through the horticultural seasonal employment scheme. Further, dairy farmers have complained recently about the problem of a drug culture among some of their staff (Finnie, 2008). A group which is available for dairy farm work and has the 'right type of attitude' to employment is the qualified/experienced Filipino dairy farm worker. They can earn far more in dairy farm work in New Zealand and still make major remittances to their families in the Philippines. To have the 'right attitude' is vital in dairy farmers' view, shown earlier (p.4), reinforced by Frank Brenmuhl, dairy chairman of Federated Farmers (Morgan, 2008). That attitude seems to be unduly compliant to employers' wishes.

Perhaps, if dairy farmers had paid more attention to dairy workers wishes, for example in the matter of hours of work, they would not now have the major retention problem they do among younger workers. They can be recruited but not retained. Perhaps dairy farmers need to start addressing the employment concerns of Gen X and Gen Y and think about what they want, not the different needs of their 'baby boomer' parents. Such workers want effective leadership, challenging work and to be given access to training and professional development opportunities (Simpson, 2007). Even their parents' loyalty must not be assumed for recent studies have suggested that older workers are losing their loyalty in favour of quick money, quick success and fast promotion ("Mature workers…", 2008) While the dairy industry has often made positive noises about such needs (e.g. pp.4-5 above), it has often not made the time available for such activities. It takes an initiative like the Amuri Dairy Employers Group (ADEG) to convert the ideas into reality and make the necessary time available for training (Edkins &Tipples, 2002). One of the advantages of OAD milking reported has been that it makes time available for activities such as training (Tipples & Verwoerd, 2006). Another advantage of OAD milking was that it permitted older workers to carry on longer in

the industry, although in a reduced capacity to a normal TAD worker (Verwoerd & Tipples, 2007). Further advantages will include the positive environmental features of less need to wash down dairy milking platforms and less excreta from OAD cows, which produce milk with less water content.

While farms are getting larger, two industry trends can be perceived (van Beynen, 2007). First, there are those successful family farmers, who can afford to borrow to buy neighbours farms which come onto the market, from their existing capital base. Vendors may be seeking to make provision for their retirement and may not have potential successors. Secondly, there are the genuine corporate farmers, such as Dairy Holdings Ltd and Synlait, which own many farms in New Zealand and Tasmania. However, corporate farming has not had a particularly successful record in New Zealand. When times get tough, as they frequently have in farming, corporate investors look at their return on capital invested and decide they can earn more elsewhere on the financial markets. The family farmer response is to tighten the belt, concentrate on maintaining cash flow and financial viability and set out to weather the storm. When it is over they often have chance to reap the capital gains the corporate investor could not wait for. Equity farming, which comes somewhere between the two involves outside capital and perhaps a farm manager, who also has a capital stake in the business. That form of ownership, which retains the incentive of the traditional sharemilking system, but does not have as heavy capital demands, may be a future step on the dairy farming ladder of the 21st century, as long as investors are prepared to wait for their returns.

As the proverbial Chinese curse has it: "May you live in interesting times[3]". The future of dairy farming from an employment point of view is sure to be an interesting time – one of further change upheaval and instability in contrast to the Confucian ideals of stability and constancy.

[3] Origin of phrase – http://www.noblenet.org/reference/inter.htm.

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7 Appendices

7.1 Appendix 1: Census variable descriptions

Census usually resident population count

The census usually resident population count of New Zealand is all people counted in New Zealand on census night, excluding overseas visitors and New Zealand residents temporarily overseas.

The census usually resident population count of an area in New Zealand is a count of all people who usually live in that area and are present in New Zealand on census night. This count excludes visitors from overseas, visitors from elsewhere in New Zealand, and residents temporarily overseas on census night.

For example, a person who usually lives in Christchurch city but was in Wellington city on census night will be included in the census usually resident population count of Christchurch city and also will be included in the census night population count of Wellington city. They will be excluded from the census night population count of Christchurch city and from the census usually resident population count of Wellington city.

Employed

A person is employed if they were in the working-age population (people aged 15 years and over) and during the week ended 5 March 2006:

- worked for one hour or more for pay or profit in the context of an employee/employer relationship or self-employment
- worked without pay for one hour or more in work that contributed directly to the operation of a farm, business or professional practice owned or operated by a relative
- had a job but were not at work due to:
  - their illness or injury
  - personal or family responsibilities
  - bad weather or mechanical breakdown
  - direct involvement in an industrial dispute
  - being on leave or holiday.

Full time: People who are employed full time usually work 30 or more hours per week.
Part time: People who are employed part time usually work fewer than 30 hours per week.

Highest qualification

Highest qualification is derived for people aged 15 years and over, and combines highest secondary school qualification and post-school qualification to derive a single highest qualification by category of attainment.

Hours worked in employment

Hours worked in employment is the total number of hours usually worked in employment per week by all people aged 15 years and over who, at the time of the census:

- worked for one hour or more for pay, profit or payment in kind, in a job, business, farm or professional practice, or
- worked without pay for one hour or more in work that contributed directly to the operation of a business, farm or professional practice operated by a relative, or
- had a job or business they were temporarily absent from.

Industry
Industry is the type of activity undertaken by the organisation, enterprise, business, or unit of economic activity within which a person aged 15 years and over is employed.

Internal migration
Internal migration is the movement of population within the national boundaries of a country, resulting from changes of usual residence.

Internal migration relates to people usually resident in New Zealand (aged five years and over) at the time of the 2006 Census who were not living in the same subject geographic area five years prior to the census. Excluded are people who did not specify a usual New Zealand address for census night 2006 or five years earlier (2001) and were classified as having 'no fixed abode', or had an 'overseas' or 'New Zealand not further defined' address.

Occupation
Occupation:

- An occupation is defined as a set of jobs that require the performance of similar or identical tasks, and is collected for employed people aged 15 years and over.
- A job is a set of tasks performed or designed to be performed by one person for an employer (including self-employment) in return for payment or profit.
- Occupation is recorded for main job only.

Status in employment
Status in employment classifies employed people aged 15 years and over according to whether they are working for themselves or for other people.

The two main criteria underlying the classification of status in employment are:

- Economic risk – a worker who assumes some or all of the 'risk' in operating an economic entity is likely to be either an employer or a self-employed person. If this is not the case, a worker is likely to be an employee.
- Economic control – who decides how and when an employed person's work is to be performed. For example, if a particular worker decides for himself or herself, they are probably either self-employed or an employer, whereas if some other person makes these decisions, a worker is more likely to be an employee.

Usual residence
Usual residence is the meshblock of the dwelling where a person considers himself or herself to usually reside, except in the following cases:

- People who board at another residence to attend primary or secondary school, and return to the home of their parent(s) or guardian(s) for the holidays, usually reside at the address of their parent(s) or guardian(s). Post-secondary students usually reside at the address where they live while studying.
- Children in joint custody usually reside at the place where they spend more nights, or if they spend equal amounts of time at each residence, they usually reside at the place where they are at the time of the census.
- People who are in rest homes, hospitals, prisons or other institutions usually reside where they consider themselves to live, and this may include the institution.
- A person whose home is on any ship, boat or vessel permanently located in any harbour shall be deemed to usually reside at the wharf or landing place (or main wharf or landing place) of the harbour.

- A person from another country who has lived, or intends to live, in New Zealand for 12 months or more usually resides at his or her address in New Zealand (for consistency with other population statistics, for example external migration).
- People who spend equal amounts of time residing at different addresses, and cannot decide which address is their usual residence, usually reside at the address they are at on census night.
- If none of the above guidelines apply, the person usually resides at the address he or she is surveyed at.

The definition of usual residence does not include a time criterion and instead uses the approach of self-definition. This is because a time criterion can lead to households and families being classified on an arbitrary basis. Furthermore, most people know where they usually live (reside) and as such this involves feelings of belonging, association and participation in and with a household.

Usual residence five years ago

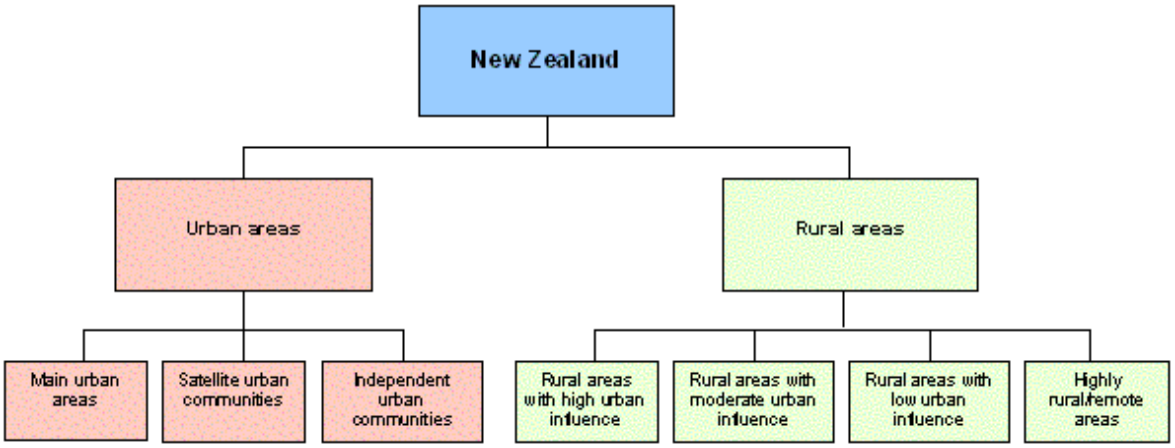
In the case of the 2006 Census usual residence five years ago was the usual residence of a respondent on 6 March 2001.

7.2 Appendix 2: Occupation classifications and codes

NZSCO99 V1.0		
Level (number at level)	Code	Classification
1 Major Group (9)	6	Agriculture & Fishery Workers
2 Sub-Major Group (25)	61	Market Oriented Agricultural & Fishery Workers
3 Minor Group (99)	612	Market Oriented Animal Producers
4 Unit Group (262)	6121	Livestock Producers
5 Group (606)	61211	Dairy Farmers/Dairy Farm Workers

ANZSCO V1.0		
Level (number at level)	Code	Classification
1 Major Group (9)	1	Managers
	8	Labourers
2 Sub-Major Group (44)	12	Farmers & Farm Managers
	84	Farm, Forestry & Garden Workers
3 Minor Group (99)	121	Farmers & Farm Managers
	841	Farm, Forestry & Garden Workers
4 Unit Group (361)	1213	Livestock Farmers
	8415	Livestock Farm Workers
5 Occupation (1001)	121313	Dairy Cattle Farmer
	841512	Dairy Cattle Farm Worker

7.3 Appendix 3: Urban/rural profile classification



Statistics New Zealand identified a need to develop a classification of rural areas that allowed the distinct rural communities present in New Zealand to be identified. The best option for defining distinct rural communities was to use workplace compared with address of usual residence as a proxy for both distance from, and the need to travel to, an urban area for employment. This option also helps answer questions raised in the 1983 report in which occupation was identified as defining distinct rural communities. The result is an index that measures degrees of 'rurality'.

Using workplace area, meshblocks in rural areas are allocated to one of four categories, based on their dependence on urban areas. Again, employment location is the defining variable. The allocation is based on a weighted percentage of resident employed adults of a rural meshblock who work in the three standard categories of urban area (for simplicity the methodology uses main, secondary and minor urban area). The percentages working in each urban area were weighted through the use of multipliers. The multipliers allowed for the increasing urbanisation of different sized urban areas. For example, the percentage of rural people working in a main urban area had double the impact of the same percentage working in a minor urban area. This weighting acknowledges the impact that a large urban centre has on its surrounding area. It is also consistent with other methodology, such as the Ministry of Education's isolation index. The weighting ensures that, for example, rural areas surrounding the secondary urban area of Gore are acknowledged as being very different from rural areas outside the main urban area of Christchurch (the latter would be included in the category rural area with high urban influence).

Rural area with high urban influence

This category identifies rural areas that form a transition between the main urban areas and rural areas, although meshblocks are not necessarily contiguous with main urban centres. The index allows for a meshblock to be included in this category only if a significant proportion of the resident employed population work in a main urban area.

Rural area with moderate urban influence

This category identifies rural areas with a significant, but not exclusively, main urban area influence. A meshblock can be included in this category: (1) if a large percentage of the resident employed population works in a minor or secondary urban area, or (2) if a significant percentage work in a main urban area. However, if the percentage working in a main urban area is too substantial, the meshblock will be included in the high urban influence category.

Rural area with low urban influence

This category identifies rural areas with a strong rural focus. The majority of the population in these areas works in a rural area. Due to the impact of the weighting system, it is unlikely meshblocks in this category will have many people employed in a main urban area, although a number may work in a minor urban area.

Highly rural/remote area

These are rural areas where there is minimal dependence on urban areas in terms of employment, or where there is a very small employed population.

(Statistics New Zealand, n.d., pp.5-8)

7.4 Appendix 4: Operating structures

Dairy Statistics 2006-2007: Operating Structures
The main operating structures found on New Zealand dairy farms are owner-operator, sharemilker, and to a lesser extent, contract milker. Owner-operators are farmers who either own and operate their own farms, or who employ a manager to operate the farm for a fixed wage. Owner-operators receive all the farm income, although they may then have to pay wages. Owner-operators comprise the largest group of all operating structures. Sharemilking has traditionally been the first step to farm ownership. Sharemilking involves operating a farm on behalf of the farm owner for an agreed share of the farm receipts (as opposed to a set wage). Two types of sharemilking agreement are commonly used: variable order sharemilking agreement, and 50% agreements. Under the 50% agreement (also called 50/50) the sharemilker owns the herd and any plant and equipment (other than the milking plant) needed to farm the property. The sharemilker is usually responsible for milk harvesting expenses, all stock related expenses, and general farm work and maintenance. The owner is usually responsible for expenses related to maintaining the property. The percentage quoted in a 50% sharemilking agreement usually refers to the proportion of milk income the sharemilker receives. While this percentage is most commonly 50%, it can range from 45% to 55%. Under the 50% agreement the sharemilker receives the agreed percentage of milk income plus the majority of income from stock sales, and the farm owner receives the remaining percentage of milk income. Unlike the 50% agreement, where the owner may have little to do with farm management, a variable order sharemilking agreement often sees the owner heavily involved in management. The variable order sharemilking agreement involves the farm owner retaining ownership of the herd and bearing more of the farm costs, such as hay-making and animal health. The amount of farm work required by the sharemilker is determined by the individual agreement, with responsibility ranging from herd management only to carrying out all farm work. Contract milkers are contracted to milk a herd at a set price per kilogram of milksolids produced. The rate is set according to the amount of farm work done. In 2006/07, all farms with contract milkers could not be identified; consequently, any farms with contract milkers are included with owner-operators.
(Livestock Improvement, 2007, pp.38-39)

Dairy Statistics 2001-2002: Operating Structures	*Dairy Statistics 2006-2007: Operating Structures*
In 2001/02, 5,164 (38%) New Zealand dairy farms operated under a sharemilking agreement. Sixty-three percent (3,240) of all sharemilkers have 50/50 agreements; 24 percent have 20-29% agreements. On average, owner-operators tend to farm smaller herds on smaller properties, while lower order sharemilkers tend to farm larger herds on larger properties.	In 2006/07, 4,122 (35%) New Zealand dairy herds operated under a sharemilking agreement. Sixty-four percent (2,634) of all sharemilkers have 50/50 agreements. On average, the smaller properties with smaller herds tend to be owner-operated, while the larger properties with larger herds tend to have sharemilkers.
(Livestock Improvement, 2003, pp.40-41)	(Livestock Improvement, 2007, pp.38-39)